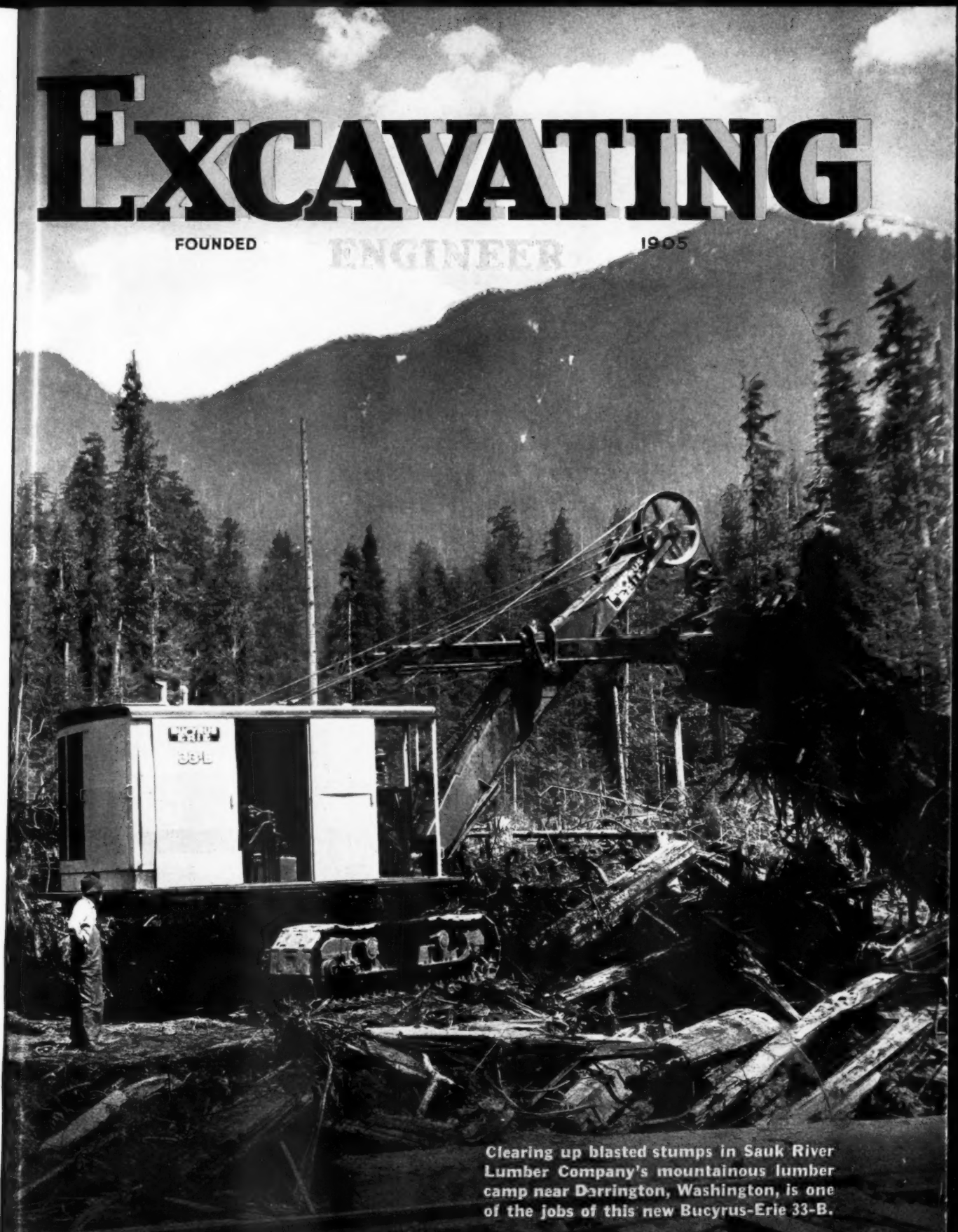
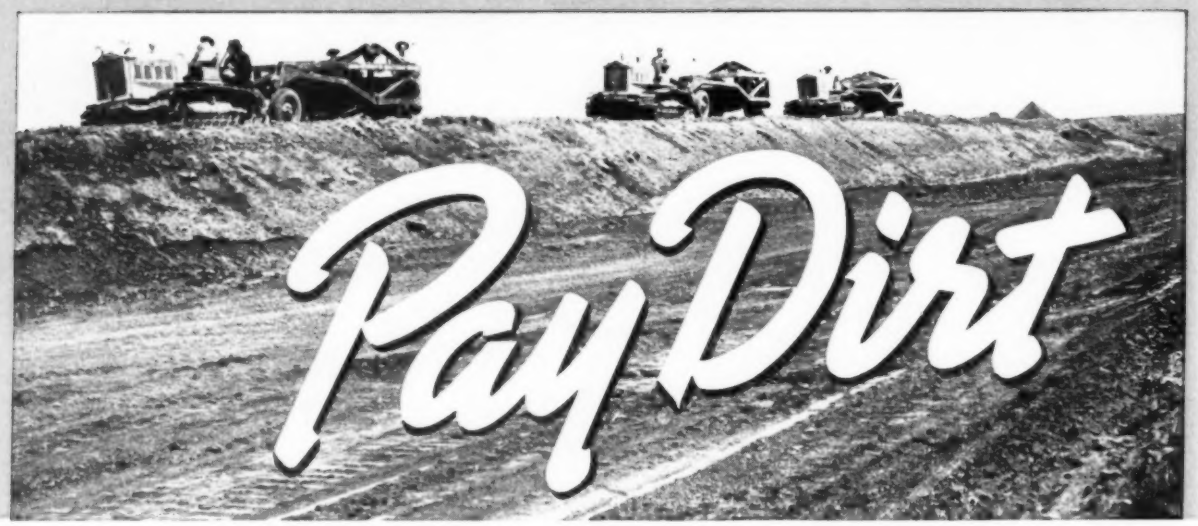
EXCAVATING ENGINEER

FOUNDED 1905



Clearing up blasted stumps in Sauk River Lumber Company's mountainous lumber camp near Darrington, Washington, is one of the jobs of this new Bucyrus-Erie 33-B.

Vol. XXXI July 1937 Number 7



. . . the ONLY kind that counts

PAY DIRT can be increased . . . yardage costs reduced . . . but only when you have the right kind of equipment.

For example, Cletrac Models DD or DG have ample power for five and six yard controlled or hydraulic scrapers under average conditions. Cletrac POWER loads scrapers in less time . . . assures more time for hauling with greater yardage.

Model FD or FG will haul plenty of pay dirt in ten to twelve yard crawler wagons over soft soil and up steep grades. Cletracs have the SPEED to clip minutes on every trip from cut to spoil bank.

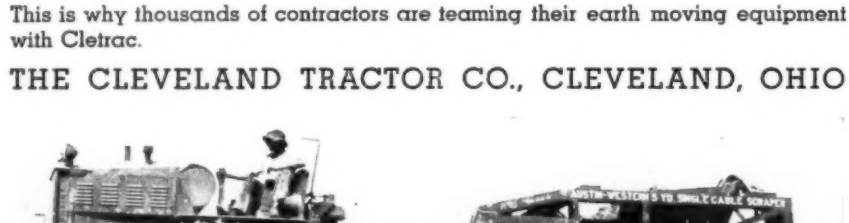
With bulldozer or trail builder Cletrac will move shot rock, earth, gravel, gumbo, vegetation, brush or stumps . . . make quick work of any clearing job and start the grading on time. Cletracs have the STAMINA to keep going under all kinds of tough conditions.

This is why thousands of contractors are teaming their earth moving equipment with Cletrac.

THE CLEVELAND TRACTOR CO., CLEVELAND, OHIO

VALUABLE DATA FOR EARTH MOVERS

—Cletrac has just published a booklet "Modern Methods of Moving Earth" that contains detailed performance information based on specific jobs. Every engineer and contractor should have a copy of this booklet. Request one on your business letterhead.



Only Cletrac has the Advantages of Controlled Differential Steering

- ★ Full traction and power on both tracks when turning
- ★ Tractor turns in shorter radius with maximum load
- ★ All steering mechanism works in one common bath of oil
- ★ Simpler—safer operation . . . easier control . . . lower maintenance cost.

CLETRAC CRAWLER TRACTORS

EXCAVATING

contents

Vol. XXXI July, 1937 No. 7

Mountain Setting . . . . . **Front Cover**

Working with Washington peaks as a background, Sauk River Lumber Company's new Bucyrus-Erie 33-B clears away blasted stumps.

Illinois River Lock . . . . . **Frontispiece**

Charles Helmig's 10-B works inside the cofferdam handling miscellaneous excavation for Great Lakes Dredge & Dock Company's lock at White Horse Crossing on the Illinois River.

More Progress on Merritt Parkway—By Spencer Jones 395

Deering Construction Company handles tough section of new super-highway with skillful blasting technique. Bucyrus-Erie 43-B loads out rock from big cut.

Catamount Dam—By H. V. Kaeppel 399

Ed. H. Honnen uses four Bucyrus-Erie shovels in interesting job near famous Pike's Peak.

Small Shovel Speed—By Henry W. Young 402

Mountain States Construction Company build unusual bridge in Oregon, showing value of small, flexible equipment.

Editorial 404

The Business Situation.....404
$250,000,000 May construction 405
S. K. Mittry 405
H. L. Cooper 405

Equipment You Ought to Know About 406

25-yard White Trucks.....406
Schramm Utility Compressor 406
Dodge Field Crew Truck....406
Ingersoll-Rand Compressors 406
Bit Grinding Attachment....406

Shots from the Firing Line 410

Flood Control Funds.....410
Robins & Roads.....410
Grand Coulee a Year Ahead 412
PWA Continues.....414
1938 Road Show to Cleveland 414
New Records at Fort Peck..414
Hour Meter for Tractors....416
Soil Study Course.....416
Trailers in Construction Field 416
Tractor Bouncing.....416

Not In the Contract 420

Trade Notes 430

Book Reviews 430

LOOKING AHEAD

These interesting articles will appear in an early issue of EXCAVATING. Watch for them.

Mosquito Control

Essex County, New Jersey, is waging a successful war against the mosquito pests, with a ⅝ yard clamshell as one of their major "big guns."

Great Lakes to Gulf

At White Horse Crossing, near Peoria, the Great Lakes Dredge and Dock Company is putting in a modern lock which, with a dam to be constructed later, is an important part of navigation improvements along the Illinois River.

Published Monthly by THE EXCAVATING ENGINEER PUBLISHING COMPANY, South Milwaukee, Wisconsin, U.S.A.

CCA Member Controlled Circulation Audit

F. O. WYSE *Manager*
D. R. REED, JR. *Associate Editor*
ARNOLD ANDREWS *Editor*
RALPH H. DIEHL *Assistant Editor*
E. M. HEUSTON *Advertising Manager*
JOHN I. MORAVEC *Art Director*

Regular subscription: 25 cents per copy, $1.00 a year; Canada and foreign, subject to publication policy, $2.00 per year. Special subscription: Upon application on card inserted in this number this publication will be sent frequently (not regularly) free of charge, to companies, executives and supervisors engaged actively in the industry of excavation.

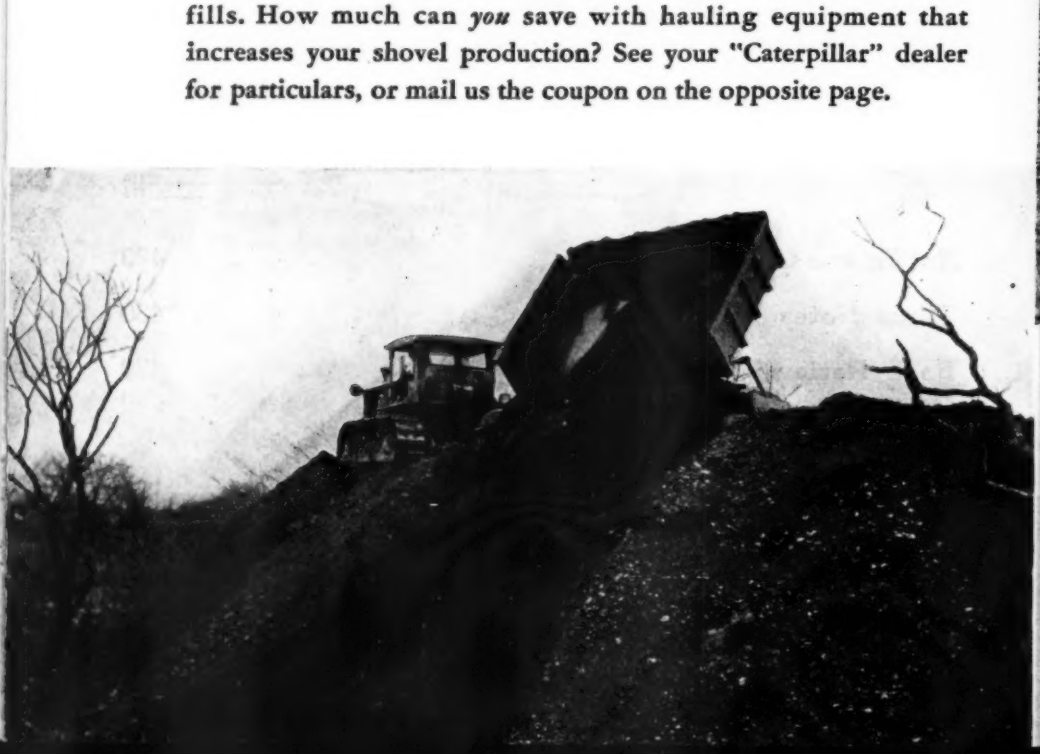
COPYRIGHT 1937 BY THE EXCAVATING ENGINEER PUBLISHING COMPANY

MORE YARDS PER HOUR

WITH THE RIGHT HAULING UNITS

Shovel production jumps when "Caterpillar" Diesel Tractor and wagon units swing into the job of hauling from the shovel. These units crawl right up under the shovel and cut down the length of the shovel swing, thus allowing it more time to dig. Then while one tractor pulls away, another takes its place. And they haul the shortest distance to the dump—cutting down the time on every trip.

No tracks to lay and re-lay—the Diesels carry their own. No delays—these units keep the shovel hustling, make every minute pay. That's why the Marquette Cement Mfg. Co., Oglesby, Ill., chose 3 Diesel RD8s with Athey Wagons to remove 450,000 yds. of overburden (see photos). And they have another Diesel tractor equipped with bulldozer to spread and smooth the material on the fills. How much can *you* save with hauling equipment that increases your shovel production? See your "Caterpillar" dealer for particulars, or mail us the coupon on the opposite page.



CA

More Progress on MERRITT PARKWAY

Most Difficult Section, Through Town of Norwalk, Now Under Construction by D. Deering Company, Inc.

By **SPENCER JONES**

THE most difficult section of the Merritt Parkway, according to Connecticut State Highway Department officials, is the 9,800-foot stretch now under construction by D. Deering Co., Inc., through the Town of Norwalk, Fairfield County, Connecticut.

Merritt Parkway, a 300-foot-wide right of way, eventually to be paved with two 26-foot concrete slabs with a 21-foot grass-covered parking strip between them, runs east in Connecticut from the end of New York State's Hutchinson River Parkway. Starting at the Connecticut-New York State line, it roughly parallels the historic Boston Post Road, traversing practically virgin territory some two or three miles to the north.

The idea of Merritt Parkway, conceived by John A. Macdonald, Commissioner of Highways for the State of Connecticut, was to provide an express highway for through traffic to points east of Bridgeport and relieve the congestion on the old Post Road. As at present planned, Merritt Parkway is about 38 miles long, passing to the north of Bridgeport and then swinging south to join the Boston Post Road at the west end of the Housatonic river bridge some four miles east of Bridgeport. About 70% of the grading of these 38 miles is completed, but only a very small part is paved as yet.

D. Deering Company, Inc., 209 Main Ave., Norwalk, Connecticut, is constructing this difficult 9,800-foot stretch through the Town of Norwalk under a contract signed in January, 1937. According to the terms of this contract, the work, which started immediately, is to be completed in 400 calendar days, the completion date being February 9, 1938. The job, when data for this article was obtained (May 17, 1937), was about 35% completed. Approximately 175 men are employed for 10 hours each working day.

© **Picture above shows Caterpillar-drawn LeTourneau scraper working in borrow pit next to earth cut. The highway under construction can be seen cutting through the trees left center.**

Geography Makes It Tough

The difficult features of the job are: First, it is divided into three separate geographical sections by two fair sized rivers, making access from one section to the other extremely inconvenient and requiring careful planning as to the distribution of equipment to keep down the need of moving from one section to another; second, in each of two sections there are heavy rock cuts through badly seamed micaceous granite which, unless carefully blasted, is likely to require much secondary shooting.

D. Deering Company's bid was $457,938.78, which includes all rough excavation and fill; removal, storage and replacement of loam; construction of two concrete bridges; shaping of slopes and shoulders; furnishing, placing and

● **Above: Blasted rock is loaded out of the cut with this 1¾-yard Bucyrus-Erie 43-B. Rock is micaceous granite, badly seamed and tricky to blast. Shovel handles an average of 750 yards per 8-hour day. Below, left to right: M. B. Pearce, Junior Highway Engineer in charge of construction; John Hassett and Alfred Cook, Assistant Highway Department Inspectors; Francis P. Hogan, Junior Highway Engineer in charge of surveys; Chas. F. Price and James C. Kingston, Junior Engineering Aids.**

rolling of gravel sub-base ready for concrete paving; construction and paving of approaches at highway intersections; the complete drainage system and the removal of a barn, shed, store, dwelling and schoolhouse. Final concrete paving will be done under separate contract after fill has had a chance to settle.

No stranger on the Merritt Parkway, Daniel Deering, in the business since 1920, has already built six miles of it under three prior contracts. Even before that he had considerable hard rock experience, having handled 2½ miles of Sawmill River Parkway in nearby New York State involving 235,000 yards of cut, mostly hard rock. In addition to his contracting activities, Deering also operates a flourishing mason material and coal business in Norwalk.

The Contract

Some of the major items in the Deering bid are:

Clearing and grubbing (a large portion of the right of way runs through rather heavily wooded country) ---------$ 18,500.00

465,560 cu. yds. unclassified excavation (about 180,000 yds. of badly seamed hard micaceous granite, with the balance a sort of plum pudding — ordinary earth being the pudding and granite boulders the plums), 50c per cu. yd. ----------$232,780.00

4,872 cu. yds. trenching, 5′ deep and 3,514 cu. yds. trenching, 5′ 10″ deep (the ditches for the drainage system), $1.30 per cu. yd.---$ 10,901.80

49,987 cu. yds. borrow, complete in place (there are about 600,000 yds. of fill to make and only about 550,000 yds. of cuts and ditches to do it with), 50c per cu. yd. ----------$ 24,993.50

17,161 linear ft. shaping of slopes and shoulders, 75c per linear ft. ---------$ 12,870.75

26,915 cu. yds. gravel fill for sub-base and culvert foundation, furnished and placed (laid in two courses; bottom course to pass screen having 3½″ square openings but to be 60% retained on screen having 1½″ square openings and to be 4″ deep after wetting and rolling with 10-ton roller; top course to pass 1½″ square screen but to be 60% retained on ¼″ square screen and to be 4″ deep after wetting and rolling with 10-ton roller), 65c per cu. yd. ----------$ 17,494.75

20,000 cu. yds. loam excavation (top soil runs 6″ to 8″ deep over right of way; this to be stripped off and stored at convenient location), 50c per cu. yd. ----------$ 10,000.00

20,000 cu. yds. placing loam excavated as above within highway limits (for

slopes of earth cuts, for fills and for parking strip between the two concrete slabs; standard loam backfill on slopes of earth cuts and sides of fills is 6″; standard loam backfill on parking strip is 10″), 50c per cu. yd. ----------$ 10,000.00

5,000 cu. yds. furnish and place additional loam (there isn't quite enough loam on the right of way, so the load from the top of the earth borrow pit will be stripped off and used for making up the difference), $2 per cu. yd. --------$ 10,000.00

125,000 sq. yds. furnish and place mulch (the State Highway Department believes in giving the grass every chance in the world), 2c per sq. yd. ----------$ 3,465.00

2,611 cu. yds. class "A" concrete complete in place (for the two bridges), $13 per cu. yd. ----$ 33,943.00

77 standard catch basins with frames and strainers complete in place, $45 each ----------$ 3,465.00

How the Job Appears

Now let's take a walk along the job. Sorry to say it rained a couple of days ago and the going is a bit muddy. Starting at the western end, the beginning of the section under contract to Deering, we go downgrade through a shallow earth cut about 1,200 feet long with a maximum depth of possibly 20 feet. This cut was scooped out with wheel scrapers which have finished their work on this part of the job and gone on about their business. We see some wheel scrapers about a mile and a half down the line and if our legs hold out we'll identify them when we catch up with them.

About 400 feet along the cut from our starting point, we pass under a concrete rigid frame bridge carrying Comstock avenue across the parkway and which M. A. Gammino, Providence, Rhode Island, is building under a separate contract.

The cut becomes shallower and shallower as we walk down the hill and, 800 feet east of the Comstock avenue bridge, we come out on a fill. Here, of course, is where the wheel scrapers dumped their loads of earth and boulders, which were then shoved around by bulldozers. There aren't any bulldozers on the fill now, but there are some visible in the distance.

The fill still continues downgrade, nice smooth job of grading, too. About 400 feet out on the fill, or 1,600 feet from our starting point, we cross Silvermine avenue on a bridge and stamp some of the mud off our shoes on the concrete rigid frame structure. It has a 32-foot span and the Mariani Construction Company, New Haven, Connecticut, is building it for Deering under a sub-contract. Over this bridge, as well as most of the other bridges, the parkway is narrowed to 60 feet over all, eliminating the parking strip.

At the bridge is Mariani's P&H crane with a 1-yard clamshell bucket which he used for placing concrete after he had hoisted the steelwork with it. The crane is evidently having a day off, for there's nobody around to run it and no one working on the bridge. Also standing in temporary idleness is a 1-yard Ransome concrete mixer, used in building the bridge.

The fill ends abruptly some 200 feet east of the Silvermine avenue bridge, about 1,800 feet from where we began to get the mud on our shoes. We look down from the end of the fill at a beautiful

● Three Ingersoll-Rand wagon drills are shown putting down 2¾-inch hole on the rock cut. Holes are reduced to 2 inches. The crew at the left is loading. Character of rock can be seen in foreground.

DANGER! BLASTING

● All ready for a shot on top of the rock cut. Holes are spaced on 5-foot centers; enameled wire, No. 6 Du Pont blasting caps, 50% DuPont Red Cross Extra Dynamite, 40% strength, and 50% DuPont Special Gelatin, 40% strength are used.

stream, the Silvermine River. There must have been silver in them thar hills. But, unfortunately, there isn't any bridge across that thar river, although the contract calls for Deering to erect a reinforced concrete arch—a sort of glorified culvert resting on steel "H" piles—with a 40-foot clear span over the water and wide enough to carry the highway across at full width on a 15-foot fill which is to rest on top of the arch.

Hard On Our Britches

Mariani has the sub-contract to build this bridge, too, but he hasn't got around to it yet. So, since we didn't bring our boat, we'll just slide down the muddy side of the fill and claw through the damp brush along the west bank of the river. Slapping at mosquitoes and shad flies, we come at last to a bridge a half mile away and then, snagging our britches on a piece of barbed wire, we claw our way back on the east bank to where the job begins again.

From this prospective bridge the fill continues, but upgrade this time, and the material in the fill has shattered rocks in it which never came from the earth cut we just passed through. As we trudge along, examining the tear in our pants leg, the fill vanishes in places and we travel on what must have been natural grade, and then through a couple of shallow rock cuts, maybe 5 or 6 feet deep.

We continue upgrade, the fill re-commencing and getting higher, until we reach another concrete rigid frame bridge, this time over Perry Avenue, about 1,700 feet east of Silvermine River and 3,500 feet east of the place where we started to ruin a 10c shoe shine.

Mariani built this bridge, too, under separate contract with the State Highway Department, and it's such a beautiful job we clamber down the fill, which is now pretty high, and take a picture of it.

● How the blasted rock looks from the operator's seat on the 43-B.

Pushing Over the Rock

However, we must get going for there's some actual work being done just ahead. The fill continues upgrade and it is, obviously, still under construction. Here's a TA-40 McCormick-Deering Tractor pushing around a Gar Wood bulldozer and there's an RD-7 Caterpillar Diesel with a LaPlant-Choate bulldozer draped around it. Both are busy as bird dogs, shoving earth and rock—mostly rock—over the edge of the fill. Five pneumatic - tired International W-3 trucks with 7-yard dump bodies keep them supplied with plenty of rock to shove. Deering hires 15 or 20 trucks like these from Bob Mossop, of the Mossop Trucking Co.

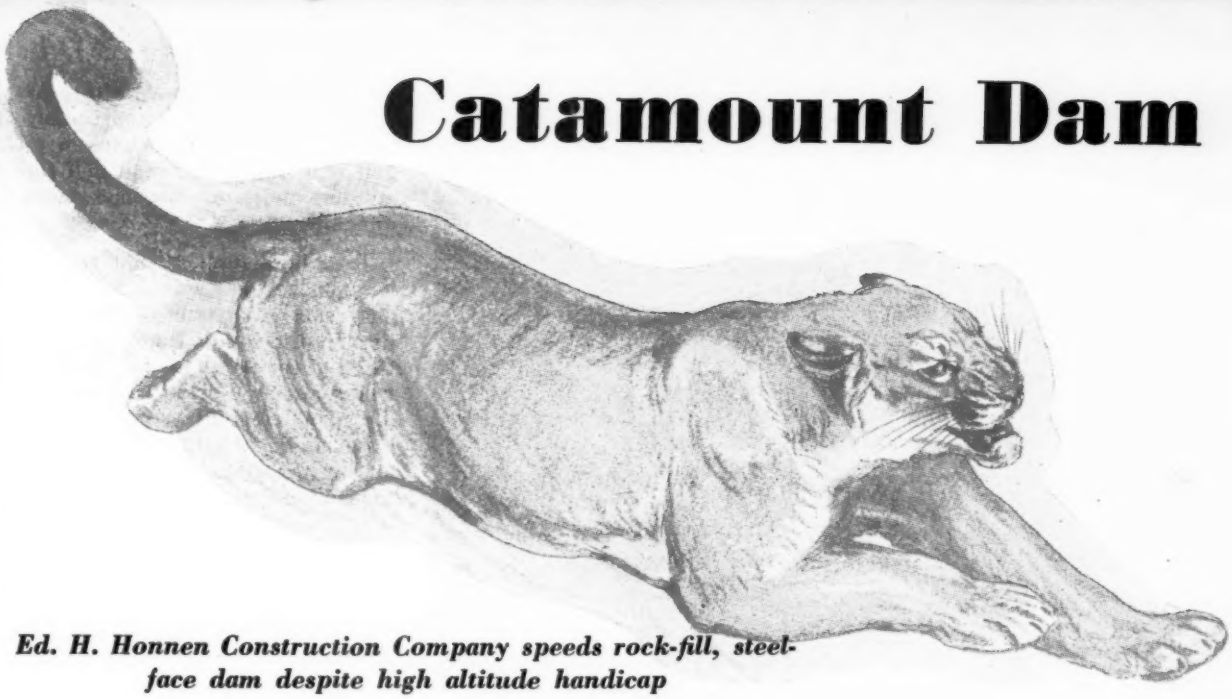
Passing the bulldozers, we hitch-hike up the grade on one of the empty trucks—thanks for the lift. The fill vanishes and we ride into a deep rock cut. Thrumming industriously at the base of an 18-foot rock cliff is a 43-B Bucyrus-Erie shovel with a Buda-Lanova motor. Ed Conroy, the operator, and George Fisher, his helper, pose obligingly while we rest the camera on the 1¾ bucket and take their pictures. Then we climb up into the cab and take a picture of what the digging looks like from Ed's seat, and shoot another picture from the side of the shovel looking down on George while he does a bit of greasing. Three Ingersoll-Rand wagon drills, drilling as loud as they can, and a crew of men loading blast holes on top of the cliff make an attractive background.

The rock is nicely broken, hardly any pieces being too unwieldy for Ed to juggle into a truck with a noble crash. "How many yards a day do you load?" we yell at him. "750 average and 900 on our best day," he hollers back.

Not being very good at mountain climbing, we have a hard

(Continued on page 422)

Catamount Dam

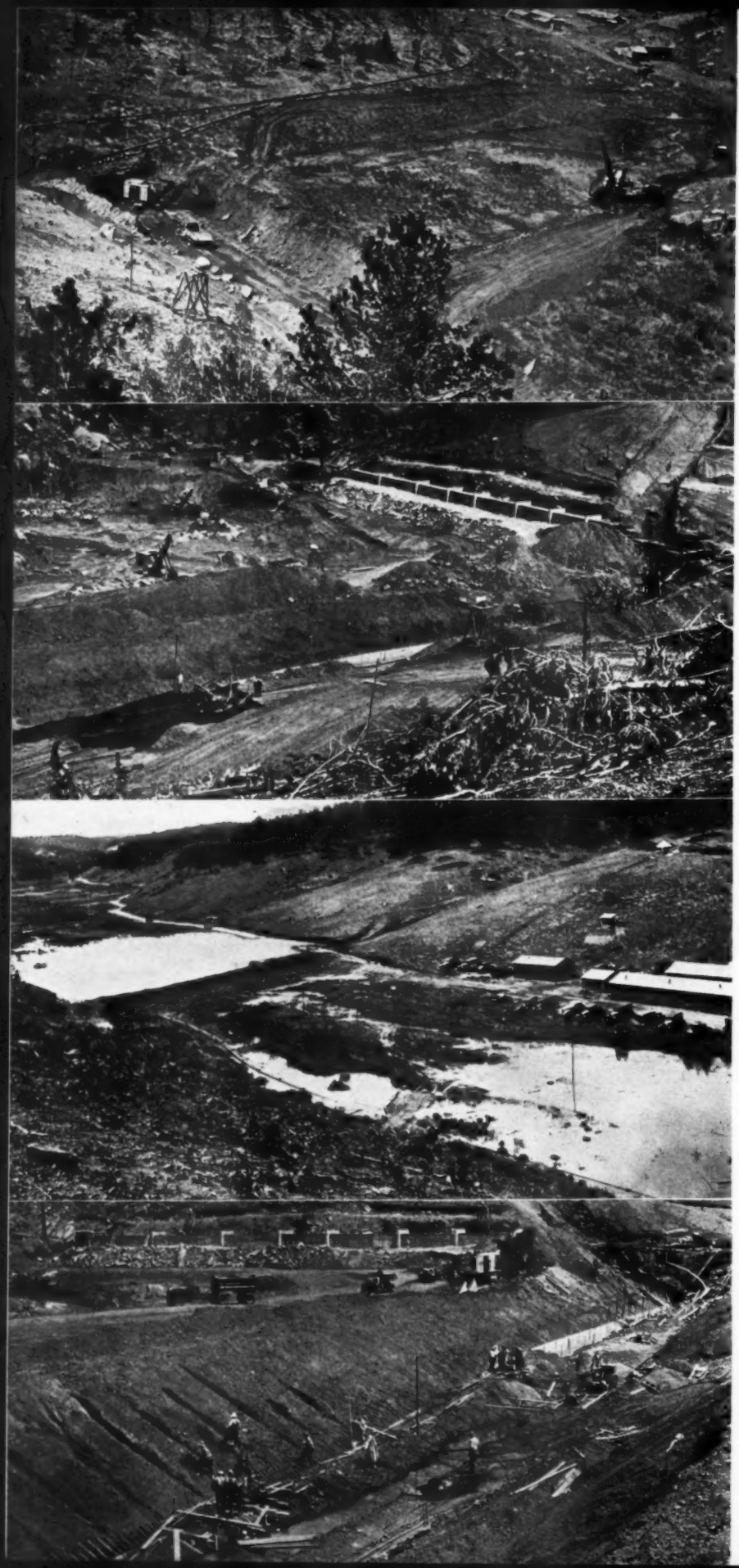


Ed. H. Honnen Construction Company speeds rock-fill, steel-face dam despite high altitude handicap

By **H. V. KAEPPEL**

BUILDING a dam at 10,000 feet above sea level puts men and machines to a grueling test and exacts from them the utmost in endurance. Near Colorado Springs, Colo., the Ed. H. Honnen Construction Co. is now finishing work on Catamount Dam, the second of a series designed to provide Colorado Springs with an adequate water supply and a third for Broadmoor Hotel, near the city. Towering above them as they worked stood majestic Pike's Peak, 14,110 feet high and about six miles away as the crow flies, except that no crow ever flies that high. Catamount Dam is approximately at the 6 mile point on the 18 mile Pike's Peak highway and is roughly 3,500 feet above the level of Col-

● **Left: Equipped with 60-foot boom and dragline bucket, the Bucyrus-Erie gas plus air works in the cut-off trench on June 6, 1936. Center: Cut-off trench operations on June 29. The gas plus air is piling dirt on bank, from which bulldozer back-filled after trench had been concreted. The 1020, equipped as clamshell has been moved in. Right: July 10. A new ⅜-yard Bucyrus-Erie 10-B clamshell has been moved in to supplement the other two rigs, shown in the background.**



orado Springs, 25 miles away. At this altitude the air is appreciably thinner than at sea level, less oxygen is available for men and for motors, and work becomes more difficult.

Just how high 10,000 feet is may be better appreciated when one realizes that only 4,000 feet higher, the top of Pike's Peak, is the highest point in the world to which one may drive a motor car. At 20,000 feet life could be sustained only with difficulty without an oxygen supply. At 10,000 feet a gasoline motor has lost approximately 33% of its horsepower, a 100 horsepower motor delivering only 66 at this altitude. Roughly it may be said that men are similarly affected and can turn out only about two-thirds as much work as at sea level.

But the altitude of the dam is not its only unusual feature. It is one of several built in this vicinity, the only rock fill dams in the country with a steel face. This is a new thing in dam construction and engineers everywhere have been watching it with great interest.

This particular dam is used to impound the waters of Catamount Creek and is expected to provide the city of Colorado Springs with 2500 acre-feet of water. It is 150 feet high and one-fourth mile wide at the base. Ed. H. Honnen, president of the company that did the work estimates that 330,000 yards of disintegrated granite were moved in three months to build the dam. The work was begun on the 5th of June, 1936 and all embankment and rip rap work was completed on the 20th of November. The digging was practically all rock but, although the rock was granite, it is not as hard as the word suggests, being a dis-

● **Top: Start of operations on June 1. The gas plus air, as a shovel, is starting the trench cut, and the 1020, at right, is stripping. Immediately below is the job as it looked on August 10. The 43-B shovel, gas plus air shovel, 1020 dragline, and 10-B clamshell are all going full speed. Below this is an August view of the temporary earth dam. Bottom: Cut-off trench on August 13. Diamond drill crews work in foreground; the 43-B cuts down the bank farther back.**

● **Top: Close-up of 43-B on August 13, 1936. The bottom of the dam will be level with the trucks. Trench must be back filled to this height. Below: September 22. The 43-B has been moved to a borrow pit and is loading out disentegrated gravel for main dam fill. Below this is a view taken November 15, looking from dam toward borrow pit. Bottom: The steel plate facing the dam is rolled at the top to keep waves from slopping over.**

integrated granite which blasts relatively easily.

At the peak of activity four Bucyrus-Erie shovels were on the job; a new 43-B 1¾-yard, a gas-air 1¼-yard, a 1020 ¾-yard, and a 10-B ⅜-yard. To the 43-B Ed. Honnen pays particular tribute stating unqualifiedly that it is a wonderful machine and did all that was asked of it. Because of the altitude this shovel was equipped with a double oversize LeRoi gasoline motor delivering 170 horsepower as against the 135 horsepower with which this machine is normally equipped. The normal operation for the 43-B was 2000 yards of rock per shift of 8 hours with a peak, achieved several times, of 2450 yards.

The 1020 was equipped with a 40 foot dragline boom and a ¾-yard bucket. The gas-air shovel averaged about 1000 yards per 8 hour shift. The four rigs were shifted from stripping to borrow pit to cut off trench, and were further called on to show versatility by operating as shovels, draglines and clamshells.

Better than could be told in words the pictures show the operations and indicate the rapid progress made between the first of June, 1936 and 15th of November the same year.

An enormous amount of material had to be removed to reach the point at which the cut-off trench could be started. This is shown in photograph No. 3 which shows the 1020 fitted with a ¾-yard clamshell on a 40-foot boom and the gas-air shovel with 60 foot boom and dragline bucket casting dirt on top of a 35 to 40 foot bank from which later the bulldozer could backfill over the cut-off trench.

(Continued on page 418)

SMALL SHOVEL SPEED

Mountain States Construction Company proves economy of doing tough small jobs with light, fast and ably-handled modern equipment

By **HENRY W. YOUNG**

THE great construction projects of recent years are by no means alone in having significant and interesting features. Many smaller jobs have been, and are being, handled at speeds quite as notable, and by methods representing a remarkable advance over those of a few years ago. The value of modern speed and efficiency on small jobs has greatly increased as the number of such jobs has increased with the passing of "Old Man Depression."

One such notable recent job was handled by the Mountain States Construction Company of Eugene, Oregon. On its bid of $90,000, this company was awarded the contract by the Oregon State Highway Department for a bridge and approaches over the Clackimas River on the Woodburn-Sandy highway at Estacada, Oregon, a town near Portland.

Tough Problems Called for Skilled Equipment Handling

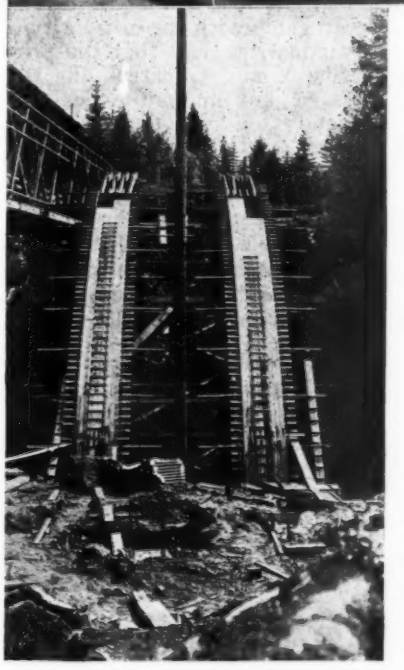
The section covered by the contract was seven-tenths of a mile long, included approaches and a concrete bridge with a 140-foot span arch. The bridge had to be built over a body of water so deep that ordinary false-work could not be employed; it is a curved structure and not a straight. A deep cut had to be made on one side of the river, and a fill on the other. The fill was compacted in eight-inch layers, and the road-bed graded and surfaced. Oiling was handled by the subcontractor. The complete job was finished, and the bridge opened for traffic in six months from the start of work.

The speed achieved was possible because of the skill with which the light, fast equipment on the job was handled by Fred Lindsay, Superintendent, and W. C. Lindsay, who represented the Mountain States Construction Company on the job. A total of 26,000 man-hours of labor, taken from W.P. M.S. relief roles, was employed.

29,000 Yards Excavated

The total excavation was 29,000 cubic yards, practically all of which was intermediate classification. This yardage represents 36,700 yard-stations of overhaul and 8,000 yard-miles of truck haul. No rock was encountered requiring blasting except a small amount in a culvert excavation. Material

Right: The completed concrete bridge fits in with the scenic beauty on this Oregon highway. Construction was handled speedily with a minimum of equipment. Below: Mountain States Construction Company's ⅜-yard Bucyrus-Erie works in narrow excavating for a culvert.



● Above: A well-equipped woodworking shop was maintained for making trusses and forms. O. M. Chaplin, bridge construction superintendent is shown at left, with his gang. Left: Placing forms for the arch was handled from a specially constructed wood truss arch.

from the cut was trucked across the old bridge to the fill on the opposite side, where it was laid down and compacted in 8-inch layers by means of a bulldozer.

Minimum Equipment Required

The following table shows the equipment used in the excavation work as well as that in the construction of the bridge itself:

- One 10-B Bucyrus-Erie gas shovel with ⅜ yd. dipper.
- One RD 4 Diesel Caterpillar tractor with 7-ft. LeTourneau bulldozer.
- Three Ford V-8 1½ yd. trucks.
- One International 1½ yd. truck.
- Two five-ton Beebe hoists.
- One Fairbanks-Morse springless scale hopper.
- Twelve Pneumatic tired 8 cu. ft. hand buggies for placing concrete. Garlinghouse Bros., Los Angeles, Calif.
- Two "Viber" pneumatic concrete vibrators.
- One Sullivan 100 cu. ft. air compressor.
- Two Gardner Denver Pneumatic hammers.
- Two Ingersoll-Rand grinding machines to finish concrete.
- One J. A. Fay & Co. 36-in. bandsaw.
- One 5 h.p. DeWalt circular saw.

While the material excavated was classed as intermediate, it represented some tough digging nevertheless. The earth was intermixed with boulders up to a foot or more in diameter, and in the cut the material was in a very compact form, in places verging on a shale-like formation. The ⅜-yard shovel kept the four trucks busy, despite the short haul and with no trouble aside from the occasional breaking of a cable. Remarking upon its performance, Fred Lindsay said: "It is light and easy to move, nevertheless is rugged. It makes up for its small size by the speed with which it operates. Whenever we can, we work three shifts a day and it has never fallen down on us, whether loading gravel or digging culvert trench. On an excavation job of these proportions it saves time and money. We can load it on a truck, bring it in and get busy in almost no time."

The bridge is a single reinforced concrete arch, with reinforced concrete column approaches. No structural steel was used. The arch has a span of 140 ft. and is designed with Concidere hinges. The latter is standard construction now on Oregon concrete arch bridges and permits of self adjustment to dead load. The bridge arch and approaches are built on an 8-degree curve, a somewhat unusual feature.

The main problem in the construction of the arch lay in the fact that the river below this point had been dammed and the arch spans a reservoir having a practically constant depth of 65 ft. The tpo of the arch is 85 feet above the surface of the water, and all footings are out of water. But the depth was so great as to preclude piling or frame bent false work, so it was necessary to erect wood arch trusses for false work.

While this of itself would be no great engineering feat for a span of short length, it must be remembered that this was a small job and it was not economical to move in heavy equipment for this or any other part of the operations. The contractor simply used an 80 ft. gin pole on each side of the river for erecting the wood arch trusses, using two 5-ton hoists. By this simple method he was able to erect the trusses in eight half sections, which weighed three tons each.

Bridge Designed to Fit Scenic Setting

The design of the bridge is simple, but it is carefully finished so as to be an ornament to the setting, which is one of great natural beauty. All forms were lined with plywood so as to secure a smooth job of uniform color. And in addition to that the pneumatic grinding wheels were freely used to make the surface as nearly perfect as possible.

The project was carried on under the supervision of State Highway Engineer R. H. Baldock, with L. C. Smitten resident engineer.

EXCAVATING

POWERED 1905

A Monthly Publication

Devoted to the Excavating Industry

The Excavating Engineer Publishing Co.
South Milwaukee, Wisconsin

F. O. WYSE
Manager

ARNOLD ANDREWS
Editor

D. B. REED, JR.
Associate Editor

JOHN I. MORAVEC
Art Director

RALPH H. DEIHL
Assistant Editor

E. M. HEUSTON
Advertising Manager

The Business Situation

MAKING money but "scared pink." Perhaps that is a little slangy for a technical discussion of business as it exists today, yet that is just about the picture. Most businesses are definitely making money and operating at a good production rate, although it is expected that the figures for the months of May and June will probably show some slight recession in industrial production.

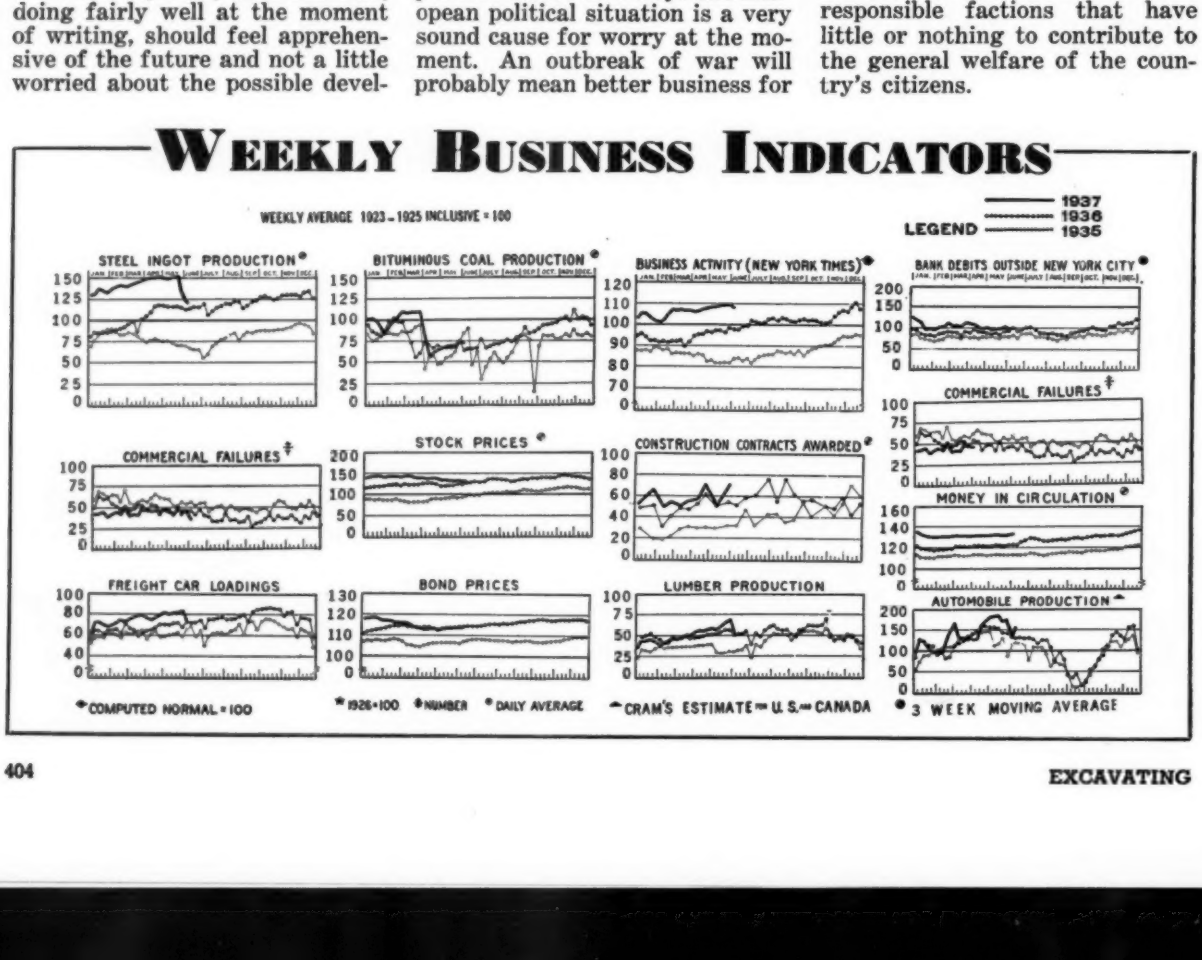
How is it, then, that business, doing fairly well at the moment of writing, should feel apprehensive of the future and not a little worried about the possible developments of tomorrow. The actual percentage of re-action at the moment is very small—almost insignificant if the average of industry be taken. Therefore, it is probably worry for the future, rather than worry concerning actual developments of the moment. Let's see what the causes of worry really are.

In the first place, there is the recent recession of the stock market. That has been sliding off in a disturbing although not alarming manner for the last several months. It may be a cause, it may be an effect, but the fact remains that a slumping market is a notorious generator of pessimism. And why shouldn't it be; as stocks fall, the owner is faced with just that much reduction in his capital, and if he hasn't a superabundance of capital, it is bound to make him worry. If the stock market is only an indicator, we must look further for our cause of worry. If, on the other hand, it is a cause of business conditions, it would appear that the great volume of unsatisfied needs will call for a still further increase of production, thus relegating the present stock market price recession to the status of a minor reaction that will not last much longer.

But there are other very important causes of worry. The European political situation is a very sound cause for worry at the moment. An outbreak of war will probably mean better business for us in the not far distant future, but it would also mean terrific difficulties in the re-adjustment of business to the new situation and the inevitable boom and depressions (both primary and secondary) that always follow war. From a short term outlook a European war would not be a serious matter for the people of United States. From a long term outlook, it would be a horrible calamity.

Legislation, particularly in the United States, has given the business man of today a pretty severe case of the "jitters." It seems impossible that the law-makers of a Nation cannot realize that the prosperity of a country is tied up irrevocably with the prosperity of its industries, and that the prosperity of any industry—the success of any human endeavor—depends to a large degree on confidence, and that confidence cannot persist when the rules of the game are constantly being changed without careful prior study of the possible results. Here again the bright side of the picture is the tremendous reservoir of business represented by the demand grown up through seven depression years of deprivation. Subheadings of this cause of worry would, of course, be taxes—federal, state and local—partisanship of governmental bodies for irresponsible factions that have little or nothing to contribute to the general welfare of the country's citizens.

WEEKLY BUSINESS INDICATORS


WEEKLY AVERAGE 1923 - 1925 INCLUSIVE = 100
LEGEND 1937 1936 1935
STEEL INGOT PRODUCTION *
BITUMINOUS COAL PRODUCTION *
BUSINESS ACTIVITY (NEW YORK TIMES) *
BANK DEBITS OUTSIDE NEW YORK CITY *
COMMERCIAL FAILURES ‡
STOCK PRICES *
CONSTRUCTION CONTRACTS AWARDED *
MONEY IN CIRCULATION *
FREIGHT CAR LOADINGS
BOND PRICES
LUMBER PRODUCTION
AUTOMOBILE PRODUCTION ^
* COMPUTED NORMAL = 100
* 1926 = 100 # NUMBER * DAILY AVERAGE
^ CRAM'S ESTIMATE — U. S. — CANADA
* 3 WEEK MOVING AVERAGE

And last but not least among the causes of worry is the great and wide-spread labor trouble. It appears to be greater in magnitude than any similar upheaval in the past. It is hard to compare one outbreak of this kind with another, for the standards by which all things are judged change with the passage of time. But there is one very definite fact in the picture at this point. We always have had labor troubles at this particular stage in the business cycle; increasing business activity has always brought about restlessness of labor resulting from a very natural endeavor to make more secure its position. And in each business cycle at this stage of the game there have always been two elements visible: those who conscientiously work toward a better standard of living, and those who merely take advantage of the temperament of the times to line their own pocketbooks at the expense of those they profess to serve. Difficulty of this sort is very real and it usually means many a disconcerting reorganizing of human plans. But an intelligent people usually reach an intelligent compromise between two controversial facts and usually develop a public opinion that causes insidiously unfair activities to eventually fall of their own weight.

There is one obvious "medicine" which would undoubtedly greatly reduce the extent to which unscrupulous persons could prey upon the laboring man; we have heard a great deal about the suggestion that labor unions be incorporated; we have heard a great deal concerning the suggestion that a financial responsibility be established by making it necessary for labor organizers to account periodically to their members. Both of these things would go far toward clearing many of the issues that make uncertain the present course of business and the nation's prosperity.

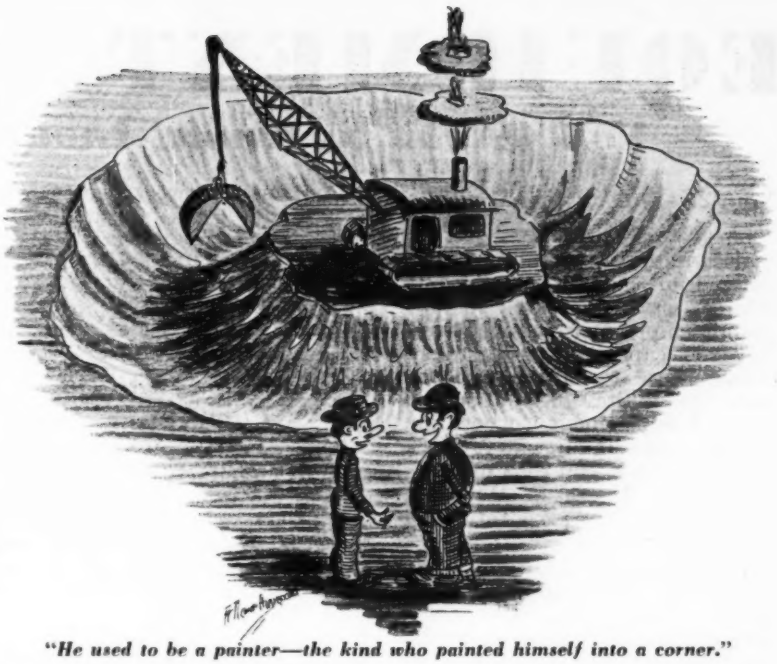
$250,000,000 May Construction

Construction in the 37 eastern states during May showed a gain of about 11 per cent over the figure for May 1936 according to F. W. Dodge Corporation. Last month's total amounted to $244,112,800 and contrasts with $216,070,700 for May 1936, and with $269,934,200 for April 1937.

Residential building during May of this year amounted to $83,937,000; this was an increase of 20 per cent over the figure of $70,253,400 reported in the 37 states for May 1936 but was sharply lower than the volume of $108,013,400 registered during April of this year. Gains in residential building over last year were general over the country except for the Southern Michigan area. At the same time declines from the April 1937 figures were rather universal, with Upstate New York exhibiting the only exception.

Non-residential building undertaken in May in the 37 states east of the Rocky Mountains amounted to $93,432,700 and compares with $82.251,700 for May 1936 and $96,179,300 for April of this year. Public works and utilities showed a total of $66,743,100 during May 1937; this was moderately better than the figure reported for either the preceding month or May 1936.

Total construction of all types started in the 37 eastern states since the beginning of 1937 has amounted to $1,176,377,200 as contrasted with only $1,004,676,100 for the corresponding five months of 1936.



"He used to be a painter—the kind who painted himself into a corner."

S. K. Mittry

S. K. Mittry, president of Mittry Brothers Construction Company, and long a well-known, well-liked figure in the excavating industry, died on May 27 in Los Angeles.

Mr. Mittry entered the contracting field in Idaho, where, with three brothers he handled building construction work. Since that time the firm has grown to be one of the leading organizations in the West—working at present on Caballo Dam in New Mexico, and the Gila project in Arizona. Other important work handled by Mittry Brothers included the Coneja Highway and the Cudahy packing plant in Los Angeles, and numerous school and airport jobs.

A resident of Los Angeles for the past 14 years, S. K. Mittry was 54 years old when he died. With his passing, excavating men have lost a valued co-worker and a friend.

H. L. Cooper

Col. H. L. Cooper, an early leader in the hydro-electric power field, died in Stamford, Connecticut on June 25. Col. Cooper designed and supervised construction of Wilson Dam at Muscle Shoals, and the Dnieperstroy Dam and power station in the Ukraine.

He had also constructed big dams and power projects in Europe, Africa, South America, Mexico, and Canada. At one time he said he had traveled two million miles in the course of his work.

Seventy-two years old when he died of arteriosclerosis, Col. Cooper is survived by his widow, two daughters, a sister and a brother.

EQUIPMENT
You Ought to Know About

New 25-Yard White Trucks

Largest of their type ever to be used in open cut mining operations, four monster Model 691 Whites, each weighing 38,000 pounds empty and equipped with 25-yard capacity steel dump bodies, were recently purchased from The White Motor Company by the Phelps-Dodge Corporation —were immediately put to work removing 4,500,000 tons of overburden on Arkansas Mountain which adjoins the corporation pit at Ajo, Arizona.

With an overall length of 26'3", and a body height of 10'8" with dump lowered, the heavy-duty jobs are equipped with hand-and-foot control Westinghouse air-brakes, have warning sirens and flood-lamps which are set in motion as soon as the truck is placed in reverse gear. Capable of carrying the same load as an ordinary railway dump car, the 691's have a special chain drive, are powered by White 5-A six cylinder overhead valve engines, have five speed transmissions. The huge dump bodies, built by the Consolidated Steel Company, are ten-and-a-half feet wide, seven feet in height. The hoists are twin-telescopic mounted outside the frame and connected to the body well toward the front. Costing

$17,500 per truck, the jobs are capable of carrying 40-ton loads.

The trucks are patterned after an experimental 691 built especially for work on the San Gabriel Dam project twelve months ago. At the time of the purchase it was estimated that 125,714 truck loads at 35 tons per load and 40 loads per eight-hour shift, would be necessary to finish the job. However, during the first week the trucks carried fifty loads per shift, and there is every indication that Phelps-Dodge will make the amazing low-cost record of .002 per ton mile, according to the White Company.

Schramm "Utility" Compressor

Schramm Inc., West Chester, Pa. are manufacturers of a new, lightweight air compressor. It is available in sizes 85 and 105 cu. ft. actual air delivery in the gasoline driven machines and in the 105 cu. ft. size in the Diesel powered units.

Compressor features include four cylinders, vertical block with light pistons, five main bearings,

force feed lubrication supplied by gear driven oil pump to all moving parts, mechanical intake valves operated from camshaft, electric self starting, and Schramm self-aligning clutch between engine and compressor.

Two portable mountings are offered in the form of a two wheel pneumatic tired trailer and the truck mounted DeLuxe model.

Dodge Field Crew Truck

Dodge announces a 1937 truck upon which has been mounted a special body designed for large passenger capacity in such fields as engineering, public utilities, and others. The unit will accommodate at least 15 persons, including the driver. The tarpaulin top may be mounted in a few minutes and side curtains are said to be easily attached or detached. Seat cushions are on hinges and beneath each is a large compartment to be used for personal luggage, tools, or other items. In the rear of the last is a compartment of 45 cubic feet capacity. It opens at the rear and large enough for the hauling of two or more tents and other bulky equipment.

Ingersoll-Rand Air Compressors

Ingersoll-Rand Company, Phillipsburg, N. J. has announced a new line of fractional horsepower air compressors. These units are made in ¼ and ½ horsepower sizes, have automatic start and stop control, and are equipped with a new style seamless steel tank and improved check valve.

When furnished for single phase current they are equipped with a brushless capacitor type motor and a built in automatic protection switch giving overload and under-voltage protection. They are rated for 150 lbs. per sq. in. maximum pressure, but may be set for lower pressures by being equipped with a reducing valve.

Bit Grinding Attachment

A new bit grinding attachment is now being manufactured by the Sullivan Machinery Company, Claremont, New Hampshire. It is for use on the various

types of detachable bit grinders now on the market. The new attachment consists of a holder for loading, a barrel with expansion collet for gripping the bit, and a rocking sleeve mounted on an adjustable base. Automatic alignment is secured by the cutting edges of the bit resting between two bars of the loading fixture and bit holder inserted in the loading casing.

HIGHWAY"...

LIS-CHALMERS TRACTORS

Madison, Wis.; Bartel-Maurer, Milwaukee, Wis.; A. E. Bounsall, Kenosha, Wis. and Chicago Heights Coal Co., Chicago Heights, Ill. A-C Tractors were used on scrapers, on elevating graders, for bulldozing, and for blade grading. But no matter what the job, their higher working speeds, greater flexibility and freedom from dead weight showed up to advantage on the cost and time sheets.

Allis-Chalmers is proud to have contributed cost-cutting equipment for so worthy a project. It is the constant objective of this company to build equipment that the contractor will be proud to own ... that will speed up the tempo of his operation, do the job "Cheaper-per-yard" and increase his profits.

ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.

ALLIS-CHALMERS OWNERS "REPEAT"

Bartel-Maurer, Milwaukee, is building the grade for 3½ miles of new 20-foot slab on U. S. 41 in Racine County, Wis. Shown here is their A-C Model "K" and bulldozer.

A. E. Bounsall has a paving contract in Kenosha County, Wis. This Model "K", one of their A-C units, is finishing the shoulder with a layer of fine sand and gravel.

Burch Construction Co. moved 183,000 yards of dirt on their 3½-mile stretch in Kenosha County, Wis. The fast-stepping Model "L" proved ideal on the elevating grader.

On the Illinois side of the line, Chicago Heights Coal Co. used Model "L" tractors to move 199,828 yards on a 4.12-mile contract.

SHOTS
from the Firing Line

Flood Control Funds

The bill for non-military army activities for the fiscal year beginning July 1, 1937, as passed by the house on June 15, included appropriations for flood control and regular army engineers' river and harbor work. Appropriations were divided with $90,882,101 for river and harbor construction, and $37,177,899 for maintenance; and $53,416,300 for flood control.

The latter funds were divided into $22,500,000 for the lower Mississippi; $30,000,000 for the Omnibus Act; $814,500 for the Sacramento River; and $100,000 for an emergency fund.

In reporting favorably on the bill, the Senate Committee raised flood control appropriations from $22,500,000 to $45,000,000 for the lower Mississippi, and from $30,000,000 to $60,000,000 for the Omnibus Act, stipulating however that if funds are allocated from the Relief Act for flood control, the new appropriations may be reduced to the figure as passed by the house.

The Senate Committee granted the Secretary of War authority to enter into construction contracts in excess of the appropriations to the extent of $38,000,000 for the Omnibus Act and $10,000,000 for the Overton Act.

Included in the bill is a tentative priority list for distribution of funds under the Omnibus Act.

Projects for which funds are earmarked from the river and harbor construction appropriations include 8,706,000 for Fort Peck, and $5,000,000 for Bonneville.

● **Nested in the lower boom of A. E. Bounsall's Bucyrus-Erie clamshell, a husky family of robins was hatched, grew up while the machine was working. One fledgling is clearly shown here in open-mouthed hunger.**

Robins and Roads

Robins may be no more than harbingers of Spring to many people, but at least one family of the red-breasted birds has wormed its way into the affection of A. E. Bounsall of Kenosha, Wisconsin, and the members of his organization working on one stretch of the new super-highway between Chicago and Milwaukee.

The Bounsall firm has a contract calling for a 4½-mile section of divided concrete highway, each of the two roadways being 20 feet wide. Traffic has been flowing swiftly over one of the roadways for some time and the entire section, except for some culvert work, will be completed about July 4th. A. E. Bounsall has long contended that concrete jobs are smooth jobs, and he quotes what happened in June to prove it.

Gravel for concrete was unloaded from freight cars by a Bucyrus-Erie 1030 clamshell. The work went along without anything particularly remarkable happening until a pair of robins, arriving belatedly from a Southern Winter, built themselves a nest in the boom, in one corner of the V-shaped cross-brace near the base. This construction job was carried on despite the handicaps offered by the constant use of the clamshell.

Once the nest was completed, the mother bird laid her eggs and went about the business of raising a family,

PWA Road Work Summary

Federal and Non-Federal Programs

Classification	Number of Structures	Number of Miles	Estimated Cost
Grand Total	1,042	31,456	$667,020,000
Federal Projects (Total)	*	22,500	462,753,000†
Federal Aid Highways Outside of Municipalities	*	11,800	185,100,000†
Extension of Federal Aid Highway Systems Through Municipalities	*	1,900	115,300,000†
Secondary or Feeder Roads	*	8,800	93,500,000†
Forest Highways	*	*	14,600,000†
Forest Service Roads and Trails	*	*	10,100,000†
National Park Roads and Trails	*	*	26,700,000†
Roads on Indian Reservations	*	*	4,500,000†
Miscellaneous Roads and Highways	*	*	12,953,000†
Non-Federal Projects (Total)	1,042	8,956	204,267,000
Highways Graded and Drained	—	1,824	18,900,000
Sand Clay Roads—Untreated	—	175	500,000
Sand Clay Roads—Surface Treated	—	146	591,000
Gravel Roads—Untreated	—	2,575	11,900,000
Gravel Roads—Treated	—	530	3,407,000
Macadam Roads—Untreated	—	46	656,000
Macadam Roads—Treated	—	334	1,884,000
Low Cost Bituminous Mixture Treat Roads	—	1,707	6,088,000
Bituminous Macadam	—	375	6,098,000
Bituminous Concrete	—	192	3,952,000
Portland Cement Concrete Highways	—	1,003	39,498,000
Bridges and Approaches	1,007	49	14,600,000
Grade Separations			
Underpasses	12	—	897,000
Overpasses	18	—	880,000
Highway Grade Separations	5	—	534,000
Highway and Street Paving Not Classified	*	*	92,700,000
Miscellaneous Roads and Highways	*	—	1,183,000

* Information not readily available.
† Includes only cost of work financed by the Public Works Administration.

—big RESULTS

Results from a Small Investment

5-Yd. Tractor Scraper is BUILT to OUTPERFORM

●You will find it impossible to buy a machine that will move more cubic yards of dirt per dollar invested. Designed to cut and load with the least horsepower.

Rugged construction throughout—over eight hundred linear feet of electric welding in each scraper.

The Austin-Western 5-Yard Tractor Scraper is simple to operate—a single cable controls every operation from the tractor. Here is an inexpensive dirt mover that is always in motion—loads and dumps to grade without stopping! Write for literature.

THE AUSTIN-WESTERN ROAD MACHINERY CO.
AURORA, ILLINOIS

Miami Stone Company, Ohio subsidiary of the France Stone Company, uses an Austin-Western 5-Yd. Tractor Scraper for stripping 3407 yards of over-burden in 73½ hours.

●

'Best equipment investment we have made." —TROYER CONTRACTING CO.

Austin-Western

The Austin-Western Road Machinery Co., C-9, Aurora, Illinois.

☐ Send a salesman.
Tell me more about the:

☐ 5-Yd. Scraper	☐ Trail Cars
☐ 12-Yd. Scraper	☐ Shovels and Cranes
☐ Badger Shovel	☐ Bituminous Distributors
☐ Motor Grader	☐ Snow Plows
☐ Roll-A-Plane	☐ Blade Grader
☐ Motor Sweeper	☐ Crushing and Washing Plants

S730

Name .....

Address .....

City ..... *State* .....

For your convenience in writing to The Austin-Western Road Machinery Co., you will find a card bound in this issue.

entirely undisturbed by what was going on immediately about her home.

Old man robin was not quite as at ease in the situation as his spouse. He foraged about and produced worms in the traditional manner, but he would come no closer to the nest than the adjacent gravel pile. Mrs. Robin took the worms from him there and fed them to the youngsters.

Operator Phil Adler helped out with the food problem by presenting crumbs and worms. Some of the other men on the job questioned, however, whether Phil's influence on the youg birds was entirely good. It seems he likes to puff on a pipe while working, and many felt that it wasn't right to expose youngsters to the tobacco habit at such a tender age.

However that may be, the young robins thrived, grew feathered and large by the time the accompanying picture was taken.

It just goes to support Mr. Bounsall's statement that concrete jobs are smooth.

Grand Coulee Over a Year Ahead

Marking another milestone, the 2,500,000th cubic yard of concrete was placed recently in Grand Coulee Dam being constructed by Mason-Welch-Atkinson-Kily for the Bureau of Reclamation on the Columbia River in Eastern Washington.

● The old and the new. On the bank at M. A. Hanna Company's mine at Palmer, Michigan, a new Bucyrus-Armstrong 27-T blast hole drill puts down as much hole per day as the older Cyclone and Armstrong rigs combined.

This amount of concrete would build a four-foot sidewalk completely around the United States and is but one item in the building of the project which is the biggest dam ever undertaken anywhere at any time by man.

Almost 10,000 cubic yards of concrete are being placed each day in the dam. Already five-eighths of the total amount of concrete covered by the present contract for construction of the foundation dam have been placed and this structure now contains about 80% as much concrete as did Boulder Dam when it was completed.

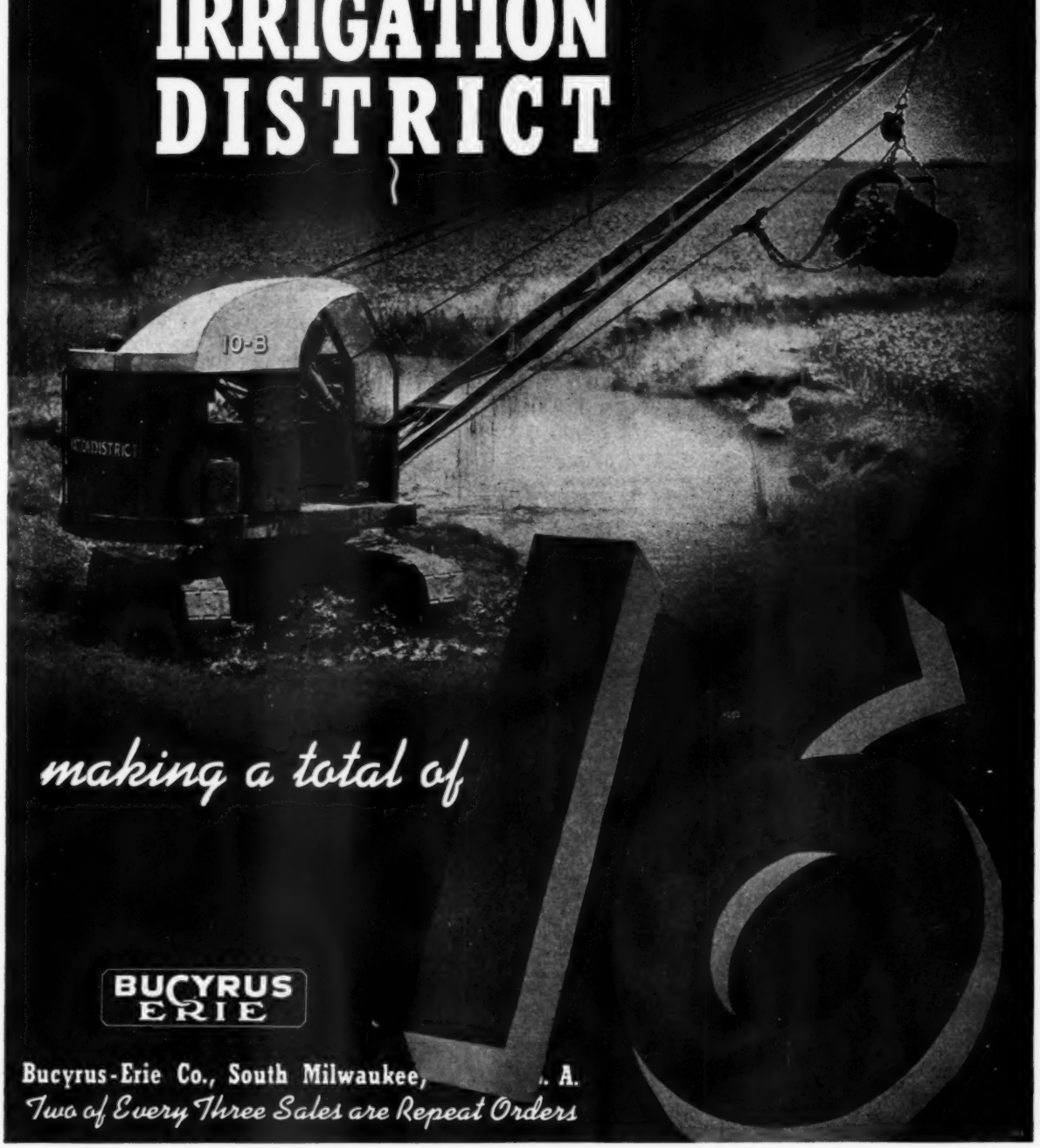
John C. Page, Commissioner of Reclamation, reported to Secretary of Interior Harold L. Ickes that construction of the dam is more than a year ahead of schedule and the foundation dam work will be completed probably by next January.

The history of construction of the Grand Coulee Dam has been, so far, one of breaking records. The 3,000-foot west side cofferdam was the largest in the world. More than 18,000,000 cubic yards of material has been excavated, most of it moving on belt conveyors from the damsite to spoil banks in nearby canyons at rates as high as 50,800 cubic yards a day. Concrete has been placed as rapidly as 9,290 cubic yards a day, using only one of the two

● H. B. Bullington of Lyons, Kansas uses this International TD-40 Trac-TracTor, equipped with Bucyrus-Erie bulldozer, for digging slush pits for oil wells. The equipment uses 2½ gallons of Diesel fuel per hour, moves an average of 300-yards in 8 hours.

Another Bucyrus-Erie *for*

IMPERIAL IRRIGATION DISTRICT



making a total of 16

BUCYRUS ERIE

Bucyrus-Erie Co., South Milwaukee, . A.

Two of Every Three Sales are Repeat Orders

For your convenience in writing to Bucyrus-Erie Company, you will find a card bound in this issue.

mixing plants which are constructed on opposite sides of the river. In the near future both mixing plants will be in operation simultaneously and concrete will be placed at the unprecedented rate of 16,000 cubic yards or more per day.

The excavation required for construction of the dam has virtually been completed. All of the dirt and clay have been removed from the damsite. Some rock excavation, however, will be necessary to complete the preparation of the foundation in the central section from which the Columbia River was diverted last winter.

P. W. A. to Continue

The Public Works Administration has been continued until July 1, 1939 by a bill passed by the house on June 7. However, future allotments by P. W. A. are limited to projects for which applications are already on file.

P. W. A.'s revolving fund contains $259,000,000, of which $124,000,000 is available for loans and $95,000,000 for grants. This does not include $53,000,000 tentatively alloted, without contracts having been definitely signed, but does include an additional $40,000,000 authorized by the house in passing the bill. Distribution of this $40,000,000 between loans and grants had not been announced as this was written.

Road Show to Cleveland in 1938

Cleveland has been chosen as the site for the 1938 American Road Builders' Association convention and road show, according to a recent announcement by the association's engineer-director, Charles M. Upham. This is the second time in three years that the road builders have scheduled their annual meeting for that city.

The week of January 17-21 has been chosen. According to reports, indications even now point to one of the biggest and most important gatherings held by this association.

New Records At Fort Peck

On June 25, an earth dike was dynamited, and the Missouri river turned from its channel into the four diversion tunnels at Fort Peck. Previously dredging equipment had been moved to the downstream side of the dam where it will build up the center, and final, section of the great earth fill dam.

All previous daily dredging records were broken by the Army Engineers at Fort Peck on June 3rd, when they pumped 238,540 cubic yards of material in 24 hours. The best previous record was made late in the season last year when 236,120 cubic yards were dredged on October 7th.

Although still near the beginning of the 1937 dredging season, the great Fort Peck battery of dirt removers has hit a stride reached near the close of the season last year. Material actually retained in place in the fill totalled 2,416,970 cubic yards for the last half of May. Comparison with previous years shows increase in operating efficiency:

May 1935	3,106,280 cu. yds.
May 1936	3,734,000 cu. yds.
May 1937	4,814,470 cu. yds.
Oct. 1936 (best month to date)	5,097,000 cu. yds.

The output for May, 1937 is thus shown to be only slightly below the maximum monthly quantity deposited last year.

Spillway Builders forces at the flood spillway have sliced down all of the wall slope on the west side of the channel except where two ramps lead up out of the pit. One ramp is near the mixer plant for concrete trucks and the other is for dump trucks going out to the spoil bank. Electric saws have done the slicing all the way, leaving a large area of sidewall exposed. This year's work is distinguished from last year's by the wider use of "gunite" protection to finished subgrade. Much of the excavation just made will stand exposed for some time before concrete slabs can be placed on it. However, the sidewall slope had to be cut down below the floor level in order to get cantilever floor slabs poured, because these support the wall slabs. Final excavation for cantilever slabs is by pull shovel, jackhammers and hand shovels loading

Drill tools . . .
that increase production

We are prepared to supply you with a complete line of drill tools to meet the requirements of your drilling conditions.

EVERY driller knows it means *increased production* to use drill tools which hold the correct shape longer. That's why Bucyrus-Armstrong tools are so popular. Made of special, wear-resisting steels, forged, machined, and heat-treated, these tools are the scientific result of over 65 years of experience. Outstanding for fast, clean-cutting performance and long life, Bucyrus-Armstrong drill tools are the choice of drillers everywhere. Send for complete tool catalog. 355FW

BUCYRUS-ERIE
EXCAVATING, DRILLING & MATERIAL-HANDLING EQUIPMENT
SOUTH MILWAUKEE, WISCONSIN
BUCYRUS ARMSTRONG

Every Cartridge Is a PRIMER CARTRIDGE

Results have often demonstrated that the explosion of the primer cartridge is the strongest in the entire load. This is because it is detonated directly by the cap instead of by the explosion of adjoining cartridges.

Cordeau-Bickford Detonating Fuse replaces all caps in each hole and acts as the detonating agent for the entire load. Each cartridge, being in contact with the Cordeau, is actually a *primer* cartridge, and "goes" with maximum force.

To secure the most effective results from your blasting operations, and to reduce the element of chance, put Cordeau to work wherever practicable.

MORE WORK FROM EXPLOSIVES

CORDEAU-BICKFORD
Detonating Fuse

THE ENSIGN-BICKFORD COMPANY • SIMSBURY • CONN.

CB62

For your convenience in writing to The Ensign-Bickford Company, you will find a card bound in this issue.

skips lifted by crawler cranes. The contractor has his forces well spread out with plenty of "elbow room" to work.

Addison Miller Inc., have ten gates set at the entrace to the channel and three of them have been welded. All main piers have been poured to the top and a second highway bridge slab has been poured. At the cut-off structure a third wall pour has been made.

A low concrete wall along the parapet at each side of the mile-long concrete trough is to be placed under the Addison Miller contract although both parapet walls rest on work executed by the Massman Co. Reinforcing steel and sectional forms are being set along the east side and 60 cubic yards of concrete have been poured in alternate sections of the wall.

"DXL" DRAGLINE BUCKET
your key to bigger payloads
LIGHTER! STRONGER! It means action—greater earth displacement per day—because special alloy steel construction enables freer handling and eliminates deadweight. Every inch is a worker of maximum strength and endurance. Write for bulletin.
The Wellman Engineering Co.
7002 CENTRAL AVE., CLEVELAND, OHIO

WILLIAMS
POWER-ARM, POWER-WHEEL, MULTIPLE-ROPE, DRAGLINE ..... buckets

Hour Meter for Tractors

The Caterpillar Tractor Company, Peoria, Ill is now including as standard equipment on all three, four, and six cylinder Diesel engines of that company's manufacture, an hour meter to act as a guide in maintaining and lubricating the engines. It is attached to the rear of the fuel injection pump housing, and is driven by the end of the shaft, fitting between the heads of the cap screws in the end of the fuel injection pump camshaft.

Public Roads Bureau Gives Soil Study Course

Soil testing has become of such importance in highway construction, and the demand for instruction in the work so great, that the Bureau of Public Roads finds it necessary to give to highway engineers in the public service a scheduled course in the study of soils. The first one began June 15 in the research laboratory of the bureau at Arlington, Virginia. Many engineers already have received instruction in methods developed in the laboratory.

The new knowledge concerning soils and how they act under different weather conditions is important in the construction of all types of road, says the Bureau. The character of soil on which a road surface is placed is often as important as the type of surface itself. The soil expert is able to indicate the general character of surface needed to meet general soil conditions and to point out those places where poor soils must be removed or given special treatment.

A knowledge of soils and soil testing is particularly necessary in constructing low-cost secondary roads. There can be no single standard method of constructing soil, sand-clay, and gravel surfaces because of the variation in local materials. The engineer must adapt his methods to the materials at hand to obtain the best results. In earlier years this was done by rule-of-thumb methods. It can now be done with accuracy if the materials are tested in a soils laboratory and the knowledge gained by painstaking research is applied.

Trailers Invade Construction Field

Trailer coaches, specially designed with upper and lower berths, are being adopted by the Ohio State Highway Department for living quarters of road construction crews. The trailers are towed to the site of construction and parked there much as the old time house cars were parked.

The trailers have been designed for living accommodations only, each trailer sleeping four persons. The specially designed upper berth beds fold into the ceiling, similar to Pullman type beds. Three trailer shells, equipped with large wardrobe and storage space for blankets and other equipment, have been purchased from the Covered Wagon Co., Mt. Clemens, Mich., for this purpose, with indications that more trailers will be placed in use at an early date.

Highway engineers report that the greater mobility of trailer coaches enables getting construction men on the job faster.

Florida Canal Completion Recommended

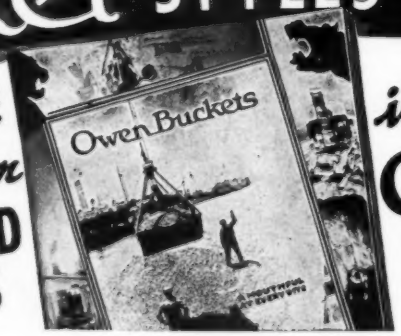
Completion of the Atlantic-Gulf Ship Canal was recommended on June 8 by the House Rivers and Harbors Committee. A majority of the committee agreed with Major-General Markham's report that the canal was a meritorious project and one which would benefit a large part of the country.

Tractor Bouncing

Despite weights hung on rear axles, bouncing of pneumatic tired tractors on rough surfaces has been an annoying problem to many operators. A solution has been announced by the B. G. Goodrich Company.

The method devised involves filling the tires with water until the level reaches the valve. Then the tire is inflated with air, as usual. The cushion of water remains at the bottom of the tire and reduces bouncing on rough ground. A calcium chloride solution added to the water prevents freezing in cold weather.

Bucket STYLES CHANGE ALSO
Get latest Information about ADVANCED MODELS



in this NEW Owen CATALOG
THE OWEN BUCKET COMPANY
6095 Breakwater Avenue - Cleveland, Ohio
BRANCHES
NEW YORK PHILADELPHIA CHICAGO BERKELEY, CAL.

For your convenience in writing to the advertisers on this page, you will find a card bound in this issue.

THE POWER TAKE-OFF THAT IS **STRONG** enough and **RESPONSIVE** enough

a small part
...but it makes
a BIG difference

● **This "Lorain 77" 1½ yd. Diesel-powered shovel is Twin Disc equipped, just as every Lorain type machine has been since 1925, when it was originally designed.**

During all these years the Twin Disc Clutch has been retained as *standard equipment* because Twin Disc Clutches are strong enough and responsive enough to reliably transmit and control the full horsepower of the engine, no matter what its type, up to 150 hp output.

Satisfactory performance is not the only reason why the Thew Shovel Company continues to use Twin Disc Clutches. Their use has simplified the design of Thew-Lorain equipment in the same manner that the use of any standard part or complete unit does when incorporated as a part of a larger design.

Twin Disc Power Take-Offs are built with clutches ranging in size from single plate 7½ in. to double plate 18 in. and housings from No. 5 to No. 00 S.A.E. *Write for specific recommendations. Engineering data on request.*

TWIN DISC CLUTCH COMPANY
1335 RACINE STREET
RACINE WISCONSIN

TWIN DISC CLUTCHES

For your convenience in writing to the Twin Disc Clutch Company, you will find a card bound in this issue.

Catamount Dam

(Continued from page 401)

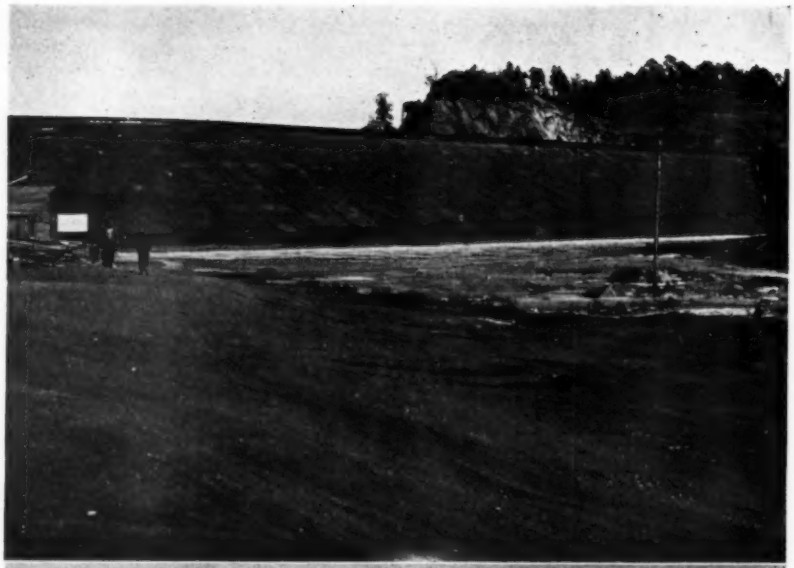
The cut-off trench was 4 feet wide and its base 55 feet below the base of the dam. The trench proper extended downward 15 to 20 feet. Material in this trench could not be blasted because it was feared that shooting might shatter the rock and create fissures through which the water could seep. As shown in the photograph, the trench had to be timbered to prevent cave-ins. The rock had to be broken with pavement breakers and was then clamshelled out.

After the trench had been dug it was diamond drilled at intervals of about ten feet for another 50 feet and 2½ inch pipe placed in the holes. The trench was then concreted and later pressure grouting was done through the pipes in order to seal up any cracks or crevices below the surface.

For hauling the earth and rock the company used three 12-yard semi-trailer, bottom dump trucks of their own design, shown in a photograph on page 401. These were used with a 2½-ton International truck chassis fitted with a hydraulic hoist to raise and lower the bottom.

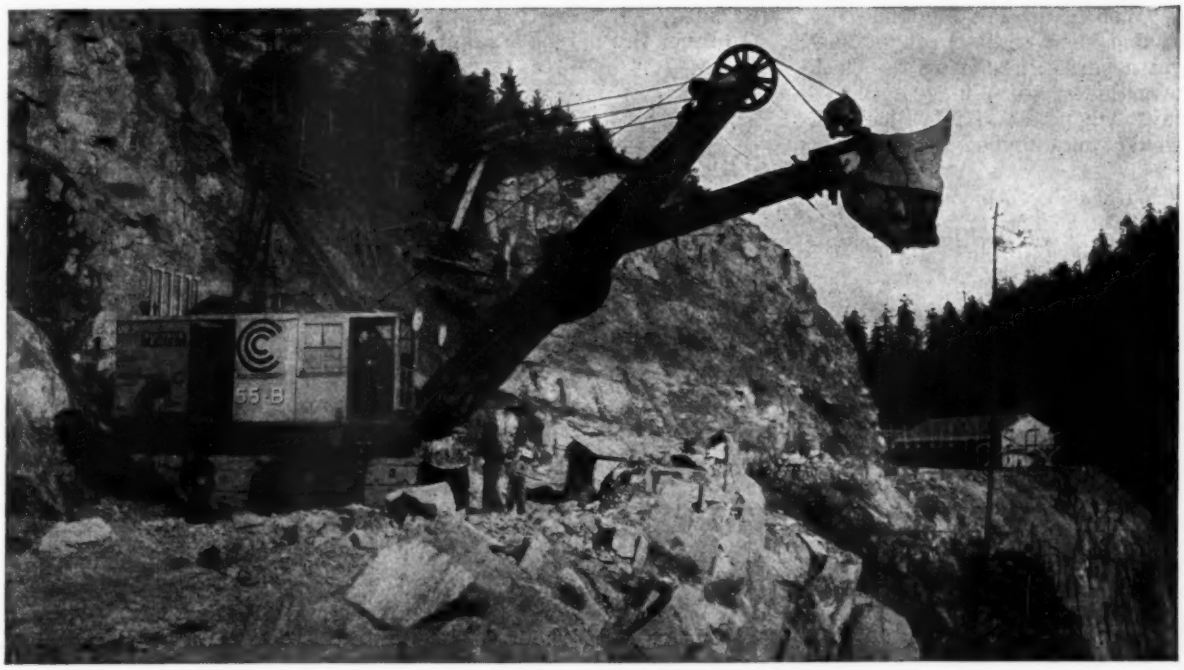
The steel face of the dam, shown in a close-up view in photograph No. 11, is peculiar to this area and is a relatively new idea in rock fill dam construction. The Catamount Dam is the fifth of this type in this area and there are no others elsewhere. Copper-bearing steel is used, one-quarter inch thick, electrically welded. At the top of the dam the steel is bent into a roll to catch the waves.

Ed. H. Honnen, president of the Ed. H. Honnen Construction Co., spent practically his entire time on this job and was ably assisted by his brother Gavin Honnen, company assistant secretary.



● **Top: A part of the completed dam, which is 150 feet high, one-quarter mile wide at base. Steel sheets are one-quarter inch thick, copper-bearing and electrically welded. Center: Snow-capped Pike's Peak shown in center background is 13 miles by highway and 6 miles by air line from Catamount Dam. Bottom: Close-up of borrow pit work showing one type of hauling equipment used.**

When the *Digging is Tough*, You can Depend on *Atlas Diesels!*



Here is one of a pair of 50-B Bucyrus-Erie Shovels, powered by Atlas Diesels, used by Columbia Construction Company in excavating rock for the jetty at the mouth of Grays Harbor, Washington.

These two shovels loaded over 100,000 tons of jetty rock, several of the rocks weighing over 30 tons each. They have built 2 1/4 miles of road, much of it double track, through tough digging as shown in this picture.

When you run up against an excavating job like this, don't cringe and hesitate to tackle it. Buy standard shovels powered with Atlas Diesels and you will have equipment that can "take it" when the digging really gets tough.

Atlas Diesels of the fully enclosed type illustrated above are available in 3, 4, 6, and 8 cylinder models in the following range of horsepowers: 45, 60, 80, 90, 120, 140, 150, 165, 200 and 275.

ATLAS IMPERIAL DIESEL ENGINE CO.

Oakland, California — Mattoon, Illinois

ATLAS IMPERIAL

For your convenience in writing to Atlas Imperial Diesel Engine Co., you will find a card bound in this issue.

Not in the Contract

"Glad to see you getting to work on time, Ed."

"Yes, sir. It's the parrot."

"Parrot? I thought I told you to get an alarm clock."

"Well, I did, but I got used to it, and slept right through. So I got a parrot, and hang the clock over his cage. What that bird says when the alarm goes off would wake anybody."

With sadness in our hearts
We buried Sammy O'Day
Who lived the life of Reilly
While Reilly was away.

"The directors of this company are a bunch of grafters."

"How come?"

"Well, they all had their appendixes removed—and charged the cost to operating expense."

Thou shalt not covet thy neighbor's wife,
His ass thou shalt not slaughter.
But thank the Lord it isn't a sin
To covet thy neighbor's daughter.

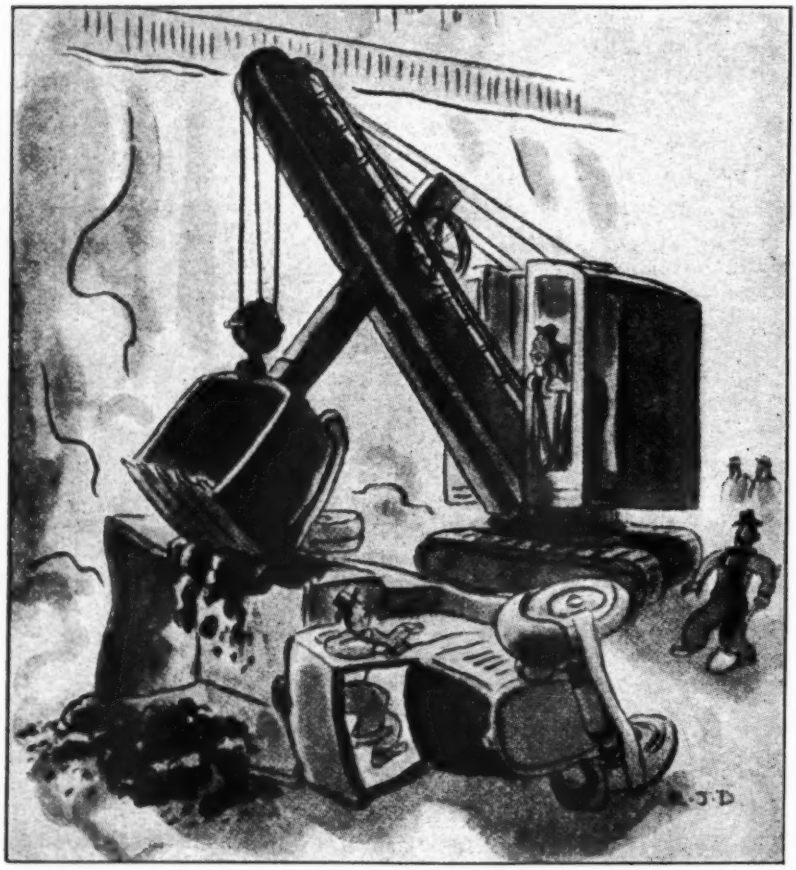
Golfer: "Yes, Jack, my wife assures me that she will leave me if I don't chuck golf."

Friend: "Hard luck, old man."

Golfer: "Yes, Jack, I'll miss her terribly."

Boss: "Now be careful with that money I gave you, son. Remember the saying, 'a fool and his money are soon parted'."

Boss' son: "Yes, Dad, but I want to thank you for parting with it, just the same."



"You'll have to excuse me. I'm all thumbs to-day"

COURTESY JOHN DAY AND THE NEW YORKER

Mazie: "I was getting fond of Ed—until he got fresh and spoiled it.

Daisie: "Isn't it terrible how fast a man can undo everything?"

Earthquakes were becoming too frequent for comfort in little Georgie's town, so he was sent to stay with an uncle who lived in a distant city until the danger passed.

He had hardly been gone a week, when he returned with a note from uncle saying:

"Am returning Georgie herewith—send me the earthquake instead."

A true lover of music is a man who, upon hearing a soprano voice in the bathroom, puts his ear to the keyhole.

Young Mother: What makes you think our boy is going to be a politician?"

Young Father: "He says more things that sound well and mean nothing than any human being I ever saw."

A.: "The artist I pose for does painting, etching and sculpturing.

B.: "But, of course, he does one thing better than anything else."

A.: "Yes—but he's pretty good at painting, etching and sculpturing."

"Bill, the baby just swallowed the matches, what can I do?"

"Use my cigarette lighter."

An English gentleman, lately arrived in China, sent for his native cook to congratulate him upon an exceptionally tasty dinner.

"I hope, Kong Ho, you did not kill one of those dogs to provide the soup," he laughingly remarked, referring to China's pariah dogs.

Kong Ho made a solemn gesture of dissent.

"Me no kill dog, master," he declared. "Him all dead when I pick him up."

(Continued on page 428)

KOEHRING

DUMPTOR

Instantaneous and convenient dumping on any kind of fill, having an open or a cramped approach, is an outstanding, time-saving feature of Koehring Dumptors. Time saved at the fill, plus savings at the loading point and while traveling materially increase the daily production. Haul and place more rock and dirt by using Koehring Dumptors.

KOEHRING COMPANY

Pavers · Mixers · Shovels · Cranes · Draglines · Dumptors · Mud-Jacks

3026 WEST CONCORDIA AVENUE, MILWAUKEE, WISCONSIN

For your convenience in writing to Koehring Company, you will find a card bound in this issue.

More Progress on Merritt Parkway

(*Continued from Page 398*)

time getting up over the shattered rocks at one side of the cut, but at last we reach the top with only one shoe very badly scuffed. Here are three Ingersoll-Rand wagon drills, all going at once, making a grand racket. Sounds like a gangster's carnival. We take a picture through one of them, looking down on the 43-B shovel, after waiting for the wind to blow the dust away a little. Then we take two more shots of the drilling, hoping the noise won't break the camera lens. Turning around, we get a couple of pictures of rows of loaded blast holes, all wired and ready to be fired. A couple of boxes of Du Pont Red Cross Extra Dynamite, 40% strength, 1½" x 8", add a dainty touch to the foreground of one of the pictures. For some reason we feel a little dainty, too, always feeling like walking on tiptoe around loaded blast holes.

Getting the foreman of the blasting crew to one side, we ask him for dope on the blasting methods followed. He says they use Du Pont's Red Cross Extra Dynamite, 40% strength, 1½" x 8", and Du Pont's Special Gelatine, 40% strength, 1½" x 8". About equal quantities of each are used in a blast hole and about ¾ of a pound of explosive breaks up a yard of rock ready for loading. A total of 8 carloads of explosives will be used on the job.

Blast holes are drilled with 2¾" removable bits, operated by Ingersoll-Rand wagon drills. Depending on circumstances, each bit makes from 2 to 8 feet of hole before sharpening is needed and the average speed of drilling is 35 feet per hour. Bits are sharpened by grinding, in Deering's own blacksmith shop, and are discarded after three sharpenings. That's hard rock!

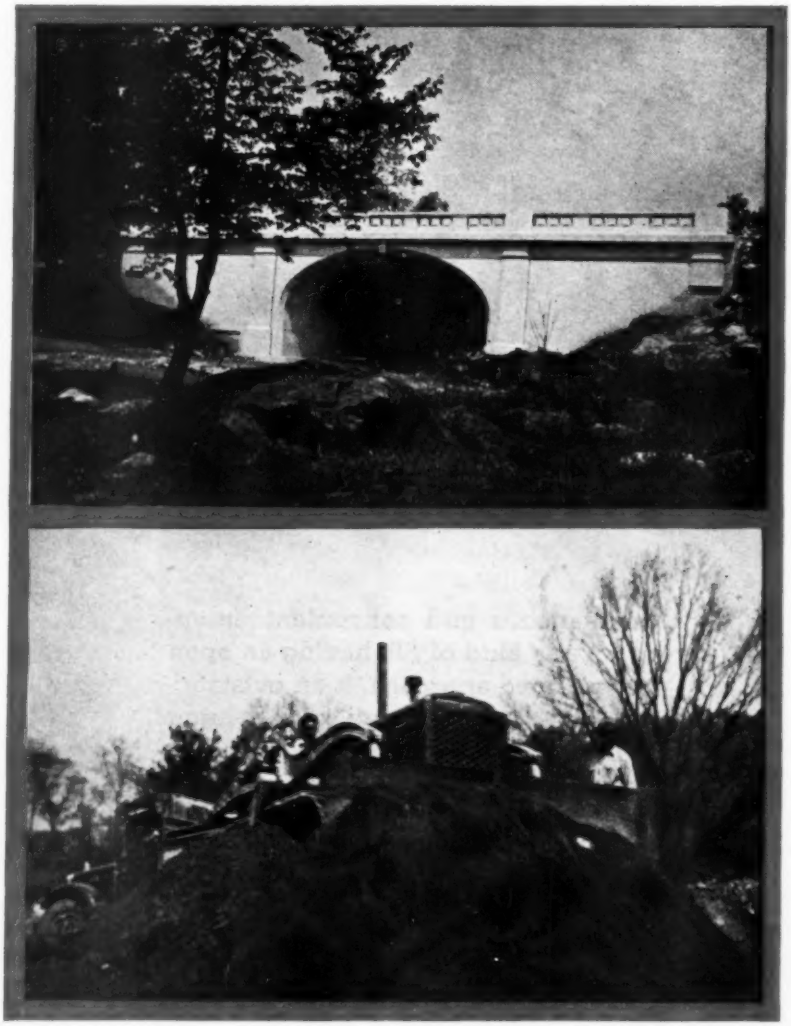
Tough Drilling

The micaceous granite is heavily seamed, which makes the drilling speed somewhat uneven and often throws the holes out of line. Average depth of holes in 18 feet and average spacing is 5 feet. Deering buys clean washed sand for stemming and finds it more satisfactory than rock dust from the job. 60 to 85 holes are fired at one time, in three rows, so that about 15 feet of the cliff face are blown down, 18 feet deep, with each shot. A series hook-up, with enameled wires and Du Pont No. 6 caps, is used and all holes are fired at once with a Du Pont 100-hole Blasting Machine.

The rock is well broken, pieces averaging about a cubic foot each. The fact that there is only one Jackhammer on the whole job indicates that there isn't much "pot-shotting" to do, although from 500 to 900 yards are brought down at each shot.

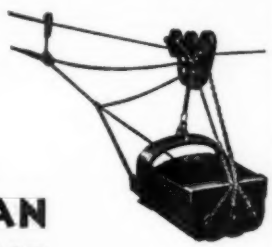
Deering's successful blasting procedure is one of the outstanding features of the job because of its thoroughness.

The explosives are stored in the woods nearby, and hearing the drumming of air compressors in that general direction, we ramble over that way. In a couple of minutes we find four 2-stage and four single-stage Ingersoll-Rand com-



● **Above: This finished concrete bridge over Perry avenue was sublet by Deering to the Mariani Construction Company, which is also handling other bridge work on this job. Below: A "dirtfall" over the edge of the fill is precipitated by this TracTracTor mounted Bucyrus-Erie bulldozer. At the right, Albert Brennan keeps his eye on the work.**

Dig Deep—
Lift High—
Carry Far—
with a
SAUERMAN SLACKLINE

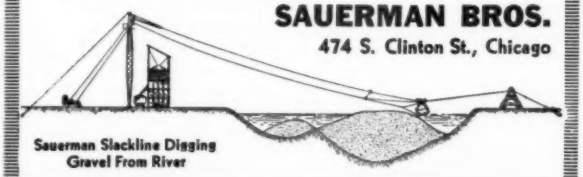


Many excavating jobs that are costly to handle with ordinary digging and conveying equipment are relatively simple for a Sauerman Slackline Cableway.

This machine is able to reach 1500 feet out into a river, pond or pit, dig to a depth of 100 feet or more, and move the excavated material in a straight line to a bin or pile at the rate of 30 to 40 bucket-loads per hour.

The one machine does everything; no rehandling of material by conveyors and elevators. The saving is considerable, both in capital cost and operating charges. *Write for Catalog.*

SAUERMAN BROS.
474 S. Clinton St., Chicago



Sauerman Slackline Digging Gravel From River

Gatke
QUALITY

ASBESTOS BRAKE and FRICTION BLOCKS

WOVEN BRAKE LINING

HYDRAULIC COMPRESSED BRAKE LINING

Their performance record is their recommendation

. . . ease of operation, no slipping or grabbing, longer life, fewer adjustments and maximum safety.

Correct your brake, friction and clutch problems economically by specifying Gatke Quality materials. Our Engineers will assist you — without obligation.

GATKE CORPORATION
General Offices
228 North La Salle St. Chicago, Illinois

BUCY
ER
BUCYRUS-ERIE SCRAPERS CUT CLOSE TO THE BANK
Bucyrus-Erie Company
EXCAVATING, DRILLING, AND MATERIAL HANDLING EQUIPMENT... SOUTH MILWAUKEE, WISCONSIN, U. S. A.

For your convenience in writing to the advertisers on this page, you will find a card bound in this issue.

pressors supplying the air for the three wagon drills at 600 cubic feet per minute.

A tank truck is supplying gasoline to the compressor motors and we find out from the driver that Deering has his own storage tanks and tank trucks for gasoline and Diesel oil.

A little further on in the woods we find the explosives cache, with a man in front of it placidly opening boxes of dynamite with a steel hatchet. Having another engagement, we return rapidly to the right of way, hoping it won't happen while we are on the job.

From the top of the rock cut we take a couple of pictures looking eastward across the next valley. Then we walk down hill, under a high tension transmission line and out on a fill, where, about 800 feet east of the top of the rock cut, and after having walked 5,300 feet from the beginning of the contract, we come to the Berkshire division of the New York, New Haven & Hartford Railroad. Here the fill ends. The Mariani Construction Company has a separate contract to build a concrete bridge over the single track, but work has not started as yet.

● **Rock fill east of Main avenue is shown being built up by a Caterpillar-drawn Euclid "Track-Wheel" 11-yard dump wagon. Note the operator's grin.**

What's Ahead

Eventually this fill, approximately 900 feet long, will extend across the valley of the Norwalk River, the stream we see below us in the valley about 350 feet east of the railroad track. 300 feet east of the river is a heavily-traveled highway which the Merritt Parkway is to cross. This is Main Avenue, Norwalk, Connecticut, Route 7. Much of the 50,000 yards of borrow listed among the bid items will go to build the fill between the railroad track and the river bridge and to make fill for a "cloverleaf" at Main Avenue. The prospective borrow pit is about ½ mile from the job. The contracts for the construction of the concrete bridges over the Norwalk River and over Main Avenue have not yet been awarded.

Making a detour to the north, we climb down off the fill and walk over to a little road which leads us eastward to a bridge over the Norwalk River. Just beyond the bridge we find that Deering

● **One and one-quarter, and one and one-half yard P & H shovels are shown loading trucks in the earth cut on the hill east of Main avenue.**

SIMPLE ARITHMETIC *Proves* LOWER HAULAGE COSTS WITH

WHITCOMB LOCOMOTIVES

● One operator with a Whitcomb Locomotive hauls many loads at a time. It is low-upkeep, long-life equipment that pays extra dividends on the investment for many years.

Wherever haulage routes are not rapidly changing, rail haulage is far more economical. New methods make the work of moving or shifting tracks faster, easier and cheaper than ever. Even first costs of track laying are often less than building dirt roads. Whitcomb Locomotives are specially balanced for temporary, rough trackage.

During more than half a century, many economy records have been made with Whitcomb Locomotives in construction work. Let our engineers survey your haulage requirements and estimate the savings you can make with Whitcomb equipment.

A SIZE AND TYPE TO SUIT YOUR NEEDS

Gasoline or Diesel Mechanical Drive
Gasoline or Diesel Electric Drive
Electric Storage Battery
Electric Trolley
Combination Trolley—Storage Battery

THE WHITCOMB LOCOMOTIVE COMPANY
PLANT AT ROCHELLE, ILLINOIS.

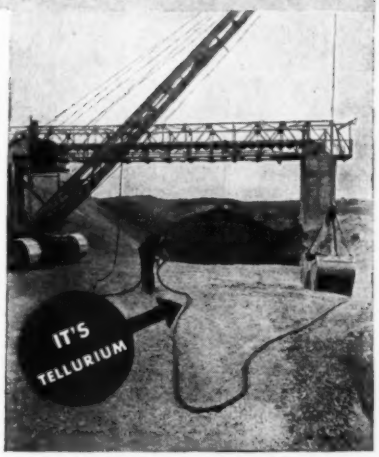
Subsidiary of The Baldwin Locomotive Works. All sales made by The Baldwin Locomotive Works. Paschall Station Post Office, Philadelphia, Pennsylvania

Cement Clinker Cuts like Emery... But CABLE Not Worn At All

Thus writes William Fowden, *plant manager of The South Dakota Cement Plant, Rapid City, S. D.*

Part of Mr. Fowden's letter is as follows:

"*. . . and I am more than satisfied with the cable we are using on our electric shovels and electric yard crane. It is pulled around in a pile of cement clinkers which has almost the cutting properties of emery. As yet we have not had any trouble with the cable, and cannot see that it has worn at all.*"



A visitor closely examines the G-E Type W three-conductor tellurium-rubber cable, in use at the South Dakota Cement Plant, and can find no signs of wear

Four Years' Service

This cable is a G-E tellurium-cured all-rubber type, three-conductor, No. 2 Awg.

It was installed in January, 1932, and when a G-E representative examined it on October, 16, 1936 he found little signs of wear, despite this nearly four years of hard service. It was once run over by a 75-ton steam locomotive, and the jacket was somewhat damaged, but a simple jacket repair put it back in service.

Tellurium-cured

The jacket on this G-E portable cable is cured or vulcanized by a special G-E process, using the element tellurium. The process results in a protective covering that is not only tough and capable of resisting abrasion, but which is also long aging and able to withstand the rays of the sun.

A Type for Every Use

You can get this G-E portable cable in every type and size, one of which is best suited for a coal-cutting, loading, or conveying machine—for an electric shovel, crane, hoist, or dredge—for a portable motor or compressor—for an arc-welding machine—in fact, for every kind of portable electric equipment.

May we send you a copy of our Bulletins GEA-1728 and GEA-1918, which give prices and specifications? Address nearest G-E sales office, or General Electric, Dept. 6F-201, Schenectady, N. Y. 520-107

GENERAL ELECTRIC

For your convenience in writing to the advertisers on this page, you will find a card bound in this issue.

● This store building was not bothered by adjacent blasting, though only one of the big plate glass windows was shielded. Blasting skill is one of the characteristics of the Deering organization.

has temporarily re-located to give his men and the public utility employees a chance to install a drainage system and new catch basins and to lower and re-locate water and gas mains under the new grade of Route 7.

This intersection is a very important one and will have, besides the concrete bridge, a skew "cloverleaf" partly on the fill and partly through a rock cut, for the fill stops and the rock starts to crop out just east of Main Avenue. This "cloverleaf" is in the Deering contract.

As we hop across ditches on the way south along Main Avenue to Deering's field office we take a picture of a couple of plate glass windows in a store building next to a rock cut for the northeast loop of the "cloverleaf." A board shelter leans against the building, protecting the glass next to the cut from flying rocks, but the windows facing Main Avenue have no protection and neither window is broken. Deering sure knows how to blast.

Meeting Some Men

At the field office we find that Mr. Deering is over in the rock cut we just passed. But in the office we meet M. B. Pearce, the State's Junior Highway Engineer in Charge of Construction, and Francis P. Hogan, Junior Highway Engineer in Charge of Surveys, whom we met on the Peter Mitchell-Merritt Parkway job a couple of years ago. Chas. F. Price and James C. Kingston, Junior Engineering Aids, drop in with Alfred Cook and John Hassett, Assistant Highway Department Inspector, so we get them to line up and take their pictures all together. Too bad that Hector Langevin, Timekeeper for the State Highway Department, was not around because we wanted his picture, too.

Under John A. Macdonald, Commissioner of Highways for the State of Connecticut, those in official charge for the Highway Department are A. W. Bushell, Engineer of Contracts and Construction, located at Hartford, and D. J. Linehan, Resident Engineer of Construction, located at New Haven. We are indebted to Wm. D. E. Colgan, Resident Engineer of Location, New Haven Residency, for the blueprints and much information about the new parkway.

Rock Cut

After talking over the job with Messrs. Pearce and Hogan, we go out to try and find Mr. Deering. He's over in the rock cut, just as we hoped, talking with Albert Brennan, Superintendent of the job, and Bob Mossop. Daniel Deering, Jr., Assistant Superintendent, is away looking after another job, so we don't get a chance to meet him, but we hear he is able to run a job as well as anyone in the business, although he is only 19 years old. One of the Bridgeport papers gave him quite a write-up a while ago and he seems to be well known for miles around.

While we are talking with Mr. Deering we take a shot of a solitary but plenty noisy Ingersoll-Rand wagon drill on top of the rock cut. By the way, Mr. Ingersoll-Rand, how's for some mufflers on those things?

This isn't as wide a cut as the one where the 43-B was working about 2,000 feet west, but it's plenty deep. Must be around 45 feet from bottom to top and about 35 feet wide at the bottom, with about a 1 to 6 slope. Same micaceous granite and same drilling and blasting methods as before. The compressed air for drilling comes from three single-stage Ingersoll-Rand compressors located near the field office, with a spare single-stage compressor standing idly nearby, in reserve for the secondary drilling which is so rarely necessary.

At the foot of the rock pile a 1½-yard Northwest shovel, with Frank Ahearn operating and Patsy Arollio helping, is loading Euclid "Track-Wheel" 11-yard dump wagons. There are two of these wagons hauling rock to the dump, each pulled by a Caterpillar "Sixty" tractor.

From the future "cloverleaf" the grade goes downhill on this fill to where a 4′ x 4′ concrete box culvert about 500 feet east of Main Avenue will carry a small stream under the right of way. The fill is almost up to the brink of the stream and a Bucyrus-Erie bulldozer, propelled by a TD-40 Diesel International Harvester TracTracTor, pauses long enough for us to get a picture of Albert Brennan standing beside it under a high tension transmission line. Then we stand on a rock in the

stream bed and snap the bulldozer shoving dirt and rocks over the bank, with Brennan, wearing his trick hat, visible over the blade.

Another bulldozer is riding around on a Caterpillar "Sixty," leveling the fill nearby, while another of the same variety is taking a driverless rest in a field beside the fill. Brennan tells us it's a spare.

● Operator Ed. Conroy and helper George Fisher of the 43-B take a minute off to pose for this "dipper's-eye" view.

Teething Rings for a Whale?

The fill is not all rock. A steady procession of trucks, ten or fifteen of them, and another Euclid dump wagon, are coming down hill loaded with earth from a shallow earth cut to the east, and, falling in line with them to add their contributions, are a Model H-8, 8-yard, Six-Wheel Gar Wood wheel scraper, towed by a "Seventy Five" Caterpillar Diesel and an 8-yard LeTourneau "Carryall" wheel scraper, towed by a Caterpillar RD-8 Diesel. The trucks all belong to Mossop who leases them to Deering. The wheel scrapers are Deering's and we'd hate to have to buy the tires for them. They would make swell teething rings for a baby whale: Four 10.50 x 20, 14-ply, and two 13.50 x 20, 16-ply Kelly tires on the Gar Wood and six 13.50 x 20, 16-ply Firestone Implement tires on the LeTourneau.

Hooking a ride up from the brook on one of the empty eastbound trucks, we round a gentle curve and reach a 12 or 15-foot earth cut near the top of the hill. Here a couple of P&H excavators, one with a 1½ and the other with a 1¼-yard bucket are loading trucks and the Euclid wagon. Dick

● Getting ready for another blast in the rock cut. The Ingersoll-Rand drills are shown starting holes with 2¾-inch bits. In the center of the picture can be seen previously drilled holes.

Hubbard runs the 1½-yard machine and Sam Bendetti the other. This earth cut will eventually be about 700 feet long. We'd like to have a thousand miles of it at 50c a yard if we had a handy place to dump the earth.

Then we shoot a picture of the two shovels loading trucks in the earth cut and look about us to see where the wheel scrapers get the earth they are hauling down to the fill. There's the LeTourneau

You can tell by looking at its lower sheave design that a

HI-POWER

is a bucket that will keep the closing line UP out of the muck, save jammed sheaves and move yardage at a profit.

It's a REAL Bucket at a RIGHT Price

Ask for Bulletin 237 on famous HI-POWER CLAMSHELL BUCKETS

WRITE WIRE OR TELEPHONE

HAISS

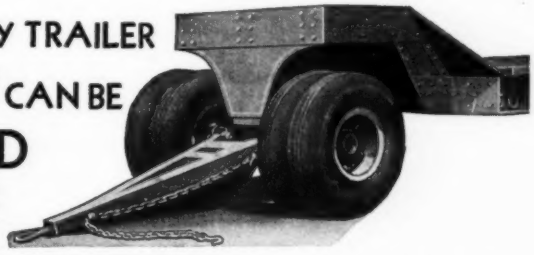
George Haiss Mfg. Co., Inc., 144th St. & Park Ave., New York

Who, for over 40 years, have created and sold none but equipment of demonstrable superiority in design and manufacture.

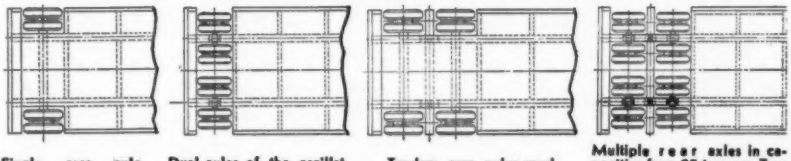
Bucket Loaders — Portable Conveyors

YOUR HEAVY TRAILER PROBLEMS CAN BE SOLVED

Your heavy trailer problems can be solved at lower cost by C. R. Jahn Standard Trailers. There is a wheel design to care for every load and practically all State Regulations. Ask—



C. R. JAHN COMPANY, Builders Bldg., CHICAGO, ILL.



Single rear axle used on four wheel trailers mounted on single or dual tires.

Dual axles of the oscillating type used on six wheel trailers placed crosswise of the rear of the frame.

Tandem rear axles used on six wheel trailers are mounted on large rocker beams.

Multiple rear axles in capacities from 25 tons up. Two oscillating axles placed in tandem and mounted on large rocker beams assure perfect distribution of load over all tires.

COME TO TRAILER HEADQUARTERS

For your convenience in writing to the advertisers on this page, you will find a card bound in this issue.

getting a long bite just south of the right of way, so we take a picture looking west at it as it follows the Caterpillar obediently, while an empty Euclid wagon and a loaded truck appear in the background, with the whole parkway, over which we have just walked, visible in the distance.

Although this is the eastern limit of Deering's progress to date, we walk conscientiously to the end of the section under contract, Crossing West Rocks Road, which is eventually to be carried over the parkway on a concrete bridge, the contract for which is not yet awarded. Another 1,200 feet further and we reach the end of Deering's section, most of which will require comparatively little digging after West Rocks Road is passed.

Off in the distance to the east another 43-B Bucyrus-Erie, working in an earth cut on the next section, a 2½-mile length recently let to Arute Brothers, New Britain, Connecticut, but we've had enough walking. So we go back to the field office, say goodbye to Mr. Deering and the rest of the bunch, and grab a free ride back to town.

Not in the Contract

(Continued from page 420)

"Dere goes dat slatternly Mandy Jones wid her ten pickaninnies. She sho do look repugnant."

"Lan' sakes! Again?"

Politician: I can get you a soft job at $3,000 a year, but, of course, that means you split with me—you get $2,000 and I get $1,000.

Worker: That's sure fine. I s'pose I'll have an assistant to do the work, won't I?

Politician: Sure, and we'll split his salary three ways for the three of us.

Was up visiting the Boss' house the other day and heard his wife telling the maid: "Marie, when you wait at table tonight for my guests, please don't spill anything."

Marie answers! "Don't you worry, ma'am; I'll keep my mouth shut."

Risking the perils of death, the valiant knight had rescued the fair maiden and, now, he was holding her in his arms.

"Listen, big boy!" she said, "You're not holding me for ransom, are you?"

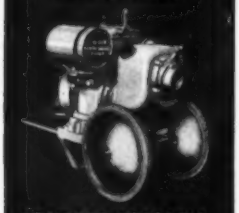
"Not me!" replied the knight. "Let Ransome get his own women."

Teacher: "Johnny, I'm surprised! Do you know any more jokes like that?"

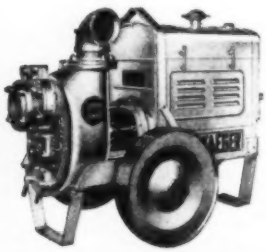
Johnny: "Yes, teacher."

Teacher: "Well, stay after school."

LOWEST PRICE
7,000 GALLON JAEGER "HANDY" SELF-PRIMER



COMPACT, PORTABLE



JAEGER "SURE PRIME" PUMPS

Prime faster, pump full volume, pump more hours. Sizes 2", 3", 4", 6", 8", 10", capacities to 200,000 G.P.H. Send for catalog. The Jaeger Machine Co., 553 Dublin Ave., Columbus, O.

HAYWARD BUCKETS

USE RIGHT BUCKET FOR THE JOB

Hayward makes all four — clam shell, drag-line, electric motor, orange peel. A Hayward recommendation is unprejudiced.

THE HAYWARD COMPANY
52-54 Church Street
New York, N. Y

POSITIONS WANTED

Positions wanted advertisements will be run under this heading for 5 cents per word, minimum charge $1.00. Advertisements for help wanted free of charge.

Address all box numbers c/o* EXCAVATING *at South Milwaukee, Wisconsin

OPERATOR

Experienced operator desires position; will take work anywhere. Has 17 years' experience; two on shovel work, nine on draglines, two on clamshells, four on cranes. Has operated steam rigs five years, electric two years, gasoline five years, Diesel five years. Prefers work on Bucyrus-Monighan or 41-B, steam or Diesel rig, one to six-yard size. Can do own repair work; 34 years old, married, can furnish good references. Now located in Ohio. Box 8601.

EXPERIENCED OPERATOR

Experience covers 15 years as dragline, clamshell operator on Diesel and gasoline machines; levee, highway and canal work. Prefers work on Monighan or Northwest. Single, age 31. Can do own repair work and furnish reliable references. Will go anywhere; now located in Louisiana. Box 8703.

OPERATOR

25 years' experience on all makes of machines, gas, electric, Diesel, and steam. Has done dragline, shovel, crane, and clamshell work. Can do own repairs; furnish best references. Willing to go anywhere. Now located in Ohio. Box 8701.

EXPERIENCED OPERATOR

Over 17 years' experience on Erie and Marion steam; Osgood gas; and Keystone excavators. Can do own repair work. Single; will go anywhere. Box 8906

EXPERIENCED OPERATOR

Over 15 years' experience on Thew Diesel, steam and gas shovels and cranes; some experience on Eries, Byers and Limas. A-1 mechanic, will go anywhere. Box 8905

STEAM SHOVEL OPERATOR

Over 20 years' experience on steam machines on all kinds of construction work. Desire position on any make, size or type steam shovel. Age 50, will go anywhere; now located in Missouri. Can do own repair work and furnish best of references. Box 8802.

OPERATOR

25 years' experience on shovel, dragline, crane and clamshell work. Can handle steam, gas or Diesel powered machines. Can do own repair work. Prefer Illinois, Indiana or Ohio, but will go anywhere on any kind of excavating. Box 9001.

OPEN PIT SUPERINTENDENT

Seeking position as superintendent in open pit mine. Capable of handling any type of equipment. Employed at present. Age 40. Will furnish best of references. Box 9002.

For your convenience in writing to the advertisers on this page, you will find a card bound in this issue.

BUCYRUS-ERIE *Everywhere* ››

BUCYRUS-ERIE COMPANY

Headquarters: SOUTH MILWAUKEE, WISCONSIN, U. S. A.
Works: South Milwaukee, Wis., Erie, Pa., Evansville, Ind.

ALABAMA, BIRMINGHAM: Bucyrus-Erie Company, 2212 Comer Building. Phone 3-0642.
ARIZONA, PHOENIX: Arizona Tractor & Equipment Co., 19 West Jefferson St.
ARKANSAS, LITTLE ROCK: Lyons Machinery Company.
CALIFORNIA, LOS ANGELES: Crook Company, 2900 Santa Fe Avenue, Phone Kimball 5137.
SAN FRANCISCO: Bucyrus-Erie Company, 989 Folsom Street, Phone Garfield 8192.
OAKLAND: Industrial Equipment Co., Outer Harbor.
COLORADO, DENVER: Ray Corson Machinery Co., 1646 Wazee Street.
CONNECTICUT, NEW HAVEN: The W. I. Clark Co., 1811 Dixwell Avenue.
FLORIDA, JACKSONVILLE: Burgman Tractor Equipment Co., 18 Riverside.
MIAMI: Florida Machinery Corporation, 312 S.W. North River Drive. Telephone 3-2466.
GEORGIA, ATLANTA: Bucyrus-Erie Company, 1701 Emory Rd., Phone Dearborn 3306-M.
ATLANTA: R. S. Armstrong & Bro. Co., 676 Marietta. Phone Jackson 2010.
IDAHO, BOISE: The Intermountain Equipment Co., Broadway at Myrtle Street, Phone 171.
ILLINOIS, CHICAGO: Bucyrus-Erie Company, 1212 Bankers Bldg., 105 W. Adams Street, Phone Central 1927.
CHICAGO: Erby-Camlin Company, 2524 Vincennes St.
ROCKFORD: Erby-Camlin Company, 224 S. Main St.
INDIANA, INDIANAPOLIS: A. F. Deasey, 315 W. Maryland St.
IOWA, CEDAR RAPIDS: James W. Bell, 916-16th N. E.
KANSAS, PITTSBURG: Bucyrus-Erie Company, 209 East 4th St., Phone 164.
WICHITA: Victor L. Phillips Co., 150 S. Washington.
KENTUCKY, LOUISVILLE: Brandeis Machinery & Supply Co., Brook & Warnock Sts., Phone Magnolia 6800.
MAINE, PORTLAND: Maine Truck-Tractor Co
MARYLAND, BALTIMORE: Stuart M. Christhilf & Co., Inc., 205 Snow Bldg., Phone Calvert 4310.
MASSACHUSETTS, BOSTON: Bucyrus-Erie Company, 240 N. Beacon St., Phone Stadium 3152.
MICHIGAN, DETROIT: Abrams-Anderson Co., 10425 Northlawn Ave.
MINNESOTA, DULUTH: Wm. H. Ziegler Co., Inc., 22 North 4th Ave. West. Phone Melrose 681.
MINNEAPOLIS: Wm. H. Ziegler Co., Inc., 2331 University Ave. S. E., Phone Gladstone 7971.
MISSISSIPPI, JACKSON: Mississippi Road Supply Co. Telephones: Long Distance 9006, Local 3676.
MISSOURI, KANSAS CITY: Bucyrus-Erie Company, 1007 Fairfax Bldg., Phone Harrison 4811.
KANSAS CITY: Victor L. Phillips Co., 16th & Baltimore Sts., Phone Harrison 8740.
ST. LOUIS: Bucyrus-Erie Co., 818 Olive St.—Suite 906, Telephone, Chestnut 1354.
ST. LOUIS: Joseph Kesl Tractor & Equipment Co., 1510 N. 13th St., Phone CEntral 8025
MONTANA, BILLINGS: Connelly Machinery Co., 509 N. 27th Street.
GLASGOW: Wm. H. Ziegler Co., Inc.
NEW JERSEY, ENGLEWOOD: Bucyrus-Erie Company, 214-216 South Dean Street. Phone 3-6727.
NEW MEXICO, ALBUQUERQUE: R. L. Harrison Co., Inc., 209 N. 4th Street.
NEW YORK, NEW YORK: Bucyrus-Erie Company, 30 Rockefeller Plaza, Room 3627, Phone Columbus 5-4295.
NEW YORK: Ginsberg & Horan, 855 Walton Ave. Phone Mott-Haven 9-5500.
SYRACUSE: Bucyrus-Erie Company, 303 Draper Ave., Phone 6-1078
NORTH CAROLINA, GREENSBORO: E. F. Craven Company.
OKLAHOMA, OKLAHOMA CITY: Victor L. Phillips Co., 1223 West Main St., Phone 7-1467.
OREGON, PORTLAND: Clyde Equipment Co., 17th & Thurman Sts., Phone Broadway 5561.
PENNSYLVANIA, PHILADELPHIA: Bucyrus-Erie Company, 821 Commercial Trust Bldg., Phone Rittenhouse 4281
PITTSBURGH: Bucyrus-Erie Co., 1502 Clark Bldg., Phone Atlantic 4815.
TENNESSEE, KNOXVILLE: Brooks-Payne-Osborne Equipment Co.
TEXAS, DALLAS: Bucyrus-Erie Company, 1212 Magnolia Bldg., Phone 2-2943.
DALLAS: F. C. Crane Co., 3120 Grand Ave., Phone 4-2181.
EL PASO: Tri-State Equipment Co., 500 E. Overland Ave.
VIRGINIA, RICHMOND: Joe. S. Potts, Jr. & Company, Travelers Bldg., Phone 3-2312.
WASHINGTON, SEATTLE: Clyde Equipment Company, 3410 First Ave., South.
SEATTLE: Bucyrus-Erie Co., 3408 First Avenue South, Phone Main 6424
WEST VIRGINIA, CLARKSBURG: General Equip. Co., Inc., 414 N. Fourth St.
HUNTINGTON: Chas. S. Porter Supply Co., 424 Fourth Ave.
WISCONSIN, MILWAUKEE: Hunter Tractor & Machinery Co., 327 South 16th St., Phone Orchard 6880

CANADA

MANITOBA, WINNIPEG: Kipp-Kelly, Ltd., 68 Higgins Avenue.
ONTARIO, TORONTO: F. H. Hopkins & Co., Ltd., Commerce & Transportation Building.
QUEBEC, MONTREAL: F. H. Hopkins & Co., Ltd., 340 Canada Cement Bldg., Phillips Square, Phone Plateau 1136

FOREIGN DISTRIBUTORS

ARGENTINE REPUBLIC: General Electric S. A. Buenos Aires, Rosario de Santa Fe, Tucuman, Cordoba, Mendoza, San Juan.
BRAZIL: International Machinery Company, Rio de Janeiro, Sao Paulo, Recife.
BOLIVIA: International Machinery Company, Oruro.
CHILE: International Machinery Company, Santiago, Antofagasta, Iquique.
CHINA: (exclusive of Manchuria) AND HONGKONG: Messrs. Arnhold & Co., Ltd., Shanghai.
COLOMBIA: International General Electric S. A., Barranquilla, Bogota, Medellin, and Cali.
GUIANA—BRITISH: Booker Bros. McConnell & Co., Ltd., Georgetown, British Guiana.
HAITI, REPUBLIC OF: Anton Kneer, Port au Prince.
HAWAII: Theo. H. Davies & Co., Ltd., Honolulu.
HONDURAS: Mullen Tractor and Equipment Co., Inc., San Pedro Sula.
JAPAN: Mitsui & Co., Ltd., Tokio and principal cities of Japan.
MEXICO: Engineering Equipment Co., S. A., Mexico D. F.
PERU: International Machinery Co., Lima.
PHILIPPINE ISLANDS: Manila Machinery & Supply Co., Inc., Manila.
PUERTO RICO: West India Machinery & Supply Co., San Juan.
SALVADOR REPUB. EL: Benjamin Sol. M., San Salvador.
TRINIDAD, DOMINICA AND THE WINDWARD ISLANDS: Neal & Massy, Engineering Co., Ltd., Port of Spain, Trinidad.
URUGUAY: General Electric, S. A. Montevideo.
VENEZUELA: International General Electric S. A., Caracas, Maracaibo.
VIRGIN ISLANDS: West India Machinery & Supply Co., San Juan, Puerto Rico.

Ruston-Bucyrus Limited

Headquarters and Works: LINCOLN, ENGLAND
Lincoln Office, Imperial House, 15, 17, 19, Kingsway, W. C. 2

ABYSSINIA: W. H. Miles, Esq., 41, Osmond Road, Hove, Sussex, England.
AUSTRALIA: Ruston & Hornsby (Australia), Pty., Ltd., Melbourne, Sidney and Brisbane.
AUSTRIA: "Garbe" Aktiengesellschaft fur Landwirtschaftliche Maschinen und Kraftfahrzeuge. Dresdnerstrasse, 87 Vienna
BELGIUM: Messrs. Bergerat-Dutry, 15-D, Allee Verte, Brussels.
BULGARIA: Watkis & Ardash, No. 11, Rue Fr. Klementina, sofia.
BURMA: William Jacks & Company, P. O. Box 80, 517 Merchant Street, Rangoon, Burma.
CZECHOSLOVAKIA: Felix Pick, Monartova 2071, Prague XVI.
DENMARK: E. T. Grew, Raadmansgade 43, Copenhagen.
EGYPT: The Tractor Company of Egypt, S. A. E., P. O. Box 366, Cairo.
ESTHONIA, TALLINN: Mr. V. M. Laussen, Roosikrantsi 3.
FEDERATED MALAY STATES: Harper-Gilfillan & Co., Ltd., P. O. Box 247, Kuala Lumpur, Selangor.
FINLAND: Aktiebolaget Enkstroms, Maskinaffar, Oy, Helsingfors.
FRANCE: Messrs. Brunner & Marchand, 3, Rue de Stockholm, Paris 8e.
GREECE: Societe Financiere et Technique de Grece, S. A. Rue Metropole No. 10, Athens.
HOLLAND: Messrs. Wynmalen & Hausmann, Postbus 1216, Rotterdam
HUNGARY: Internationale Maschinenhandels, V., Vilmos csaszar-ut 32, Budapest.
INDIA (EASTERN): McLeod & Co., P. O. Box 78, Calcutta.
INDIA (WESTERN): Greaves Cotton & Co., Ltd., P. O. Box 91, Bombay.
IRELAND: Ruston & Hornsby Ltd., Dublin Ireland.
ITALY: Soc. An. Ing. F. Fiorentini & C., Via Tiburtina N. 364, Casela Postale 1159, Roma (38).
KENYA, UGANDA, AND TANGANYIKA: Messrs. Galley & Roberts, Limited, Nairobi, Kenya Colony, British East Africa.
LATVIA: Argonaute—E. Meyer, Terbatas iela 9/11, Riga.
NEW ZEALAND: John Burns & Company, Ltd., Customs Street, East, Auckland.
NORWAY: Maskin A/S Fay & Brinck, P. O. Box 653, Oslo.
PALESTINE: Mr. A. Koch, Engineering Works & Supplies, P. O. Box 707, Jerusalem.
POLAND: Eugene Bojemski, c/o The Sullivan Machinery Co., No. 1, Podgorna, Ind. Katowice, Upper Silesia.
PORTUGAL: Monteiro Gomes, Limitada, Rua Cascais, 47 Alcantara, Lisboa.
SCOTLAND: Ruston & Hornsby, Ltd., 200 St. Vincent St., Glasgow.
SIAM: Bangkok Dock Co., Bangkok.
SPAIN: Messrs. Gumersindo Garcia, Calle Serrano 59, Madrid.
STRAITS SETTLEMENTS, SARAWAK AND BRITISH NORTH BORNEO: Messrs. The United Engineers, Ltd., Singapore and 87 Bishop Street, Penang.
SUDAN: Sudan Mercantile Company, Limited, P. O. Box 97, Khartoum.
SWEDEN: A. B. Tornborg & Lundbergha, Etr., Norra Bantorget 22 Stockholm.
SWITZERLAND: U. Ammann Maschinenfabrik, A. G. Langenthal.
TURKEY: Said Akinci ve Said Dormen, Galata, Bozkurt-Jeneral Han No. 4-5-6, Istanbul.
UNION OF SOUTH AFRICA: Hubert Davies & Co., Ltd., P. O. Box 1386, Johannesburg, Transvaal.
YUGOSLAVIA: Messrs. H. & Ch. Voegeli, P. O. Box 56, Pariska, H. L. 7, Beigrade.

Local distributors in principal countries on the following continents: Europe, Africa, Asia (except Japan and China) Australasia and New Zealand.

Bucyrus-Monighan Co.

Works: Chicago, Ill.

Products sold exclusively by Bucyrus-Erie Company, Ruston-Bucyrus Limited and their distributors.

Trade Notes

Tractor & Equipment Co., Chicago, Ill. announces the addition to its sales personnel of Mr. C. H. ("Kid") Long, formerly of Ft. Wayne, Ind. Mr. Long will make his headquarters in the Calumet District of Indiana and Illinois.

Charles Netzorg, long identified with the machinery and contractor's supply business in Chicago and vicinity, has accepted a position in the sales department of the **Tractor & Equipment Co.**, Chicago, Ill.

The Harnischfeger Corporation of Milwaukee announces the appointment of J. P. Morrissey as head of the Weld Rod Sales Division. Mr. Morrissey attained recognition with his article in the Saturday Evening Post concerning his experiences as Technical Welding Adviser for the Russian government in 1930. Besides his experience in Russia, his former connections include six years as special representative on weld rods with the Crucible Steel Company of America and some time with the Fusion Welding Corporation as their Philadelphia district manager.

Book Reviews

Ingersoll-Rand, 11 Broadway, New York, N. Y. are publishers of a new catalog describing their Cameron Motorpumps. These pumps combine electric motor and centrifugal pumps in a single unit. Motor sizes range from ¼ to 40 HP. Capacities range from 5 to 1000 gals. per min. for heads to 500 ft.

A descriptive and well illustrated bulletin put out by the **C. H. & E. Manufacturing Co., Inc., Milwaukee, Wis.**, shows this company's line of centrifugal pumps, belt drive pumps, hoists, saw rigs, road pumps, and rollers. A copy of this bulletin will be furnished upon request.

The Cleveland Tractor Company, Cleveland, Ohio has recently issued an eighty page book called "Modern Methods of Moving Earth". The book is profusely illustrated and contains comprehensive information about bulldozers, trailbuilders, crawler wagons, carry scrapers, rippers, sheeps foot tampers, elevating graders, etc. In addition such subjects as factors influencing earth moving estimates, short cuts in estimating, and estimated cost of tractor operation are discussed. A limited supply of these books is available.

The Precision Engineering Company, Kansas City, Mo. has just released a folder dealing with their product, the Precision Automatic Oil Refiner. This folder describes the method for refining old oil, results that may be expected, cost of operation and savings involved, as well as various other facts about the Refiner.

In a new Bulletin 3600-A1, **Fairbanks, Morse & Co.** describes the construction and applications of its Model 36 Diesel Power Units. The Model 36 Diesel offered in two cylinder sizes and in various combinations, with rating as low as ten horsepower, is the smallest in the complete line of Fairbanks-Morse Diesels.

A study of the many sectional views and illustrations of parts is contained in the bulletin.

"Haynes Stellite J-Metal Cutting Tools," a new 52-page booklet of interest to users of machine tools, has just been published by **Haynes Stellite Company**, Kokomo, Indiana, a Unit of Union Carbide and Carbon Corporation. This booklet, with over 60 illustrations of tools and machining operations, contains complete, detailed information on how to obtain maximum results in machining cast iron, malleable iron and most steels.

An eight page booklet containing much data on pneumatic tires for earth moving equipment has just been issued by the **B. F. Goodrich Company**, Akron, Ohio, and is now available upon request to the manufacturer.

The booklet outlines the growing importance of the earth moving equipment field, and how the use of pneumatic tires allows greater speed, lower costs, and longer life of the vehicle, due, according to the manufacturer, to greater cushioning. It also describes construction features of Goodrich tires made especially for this field.

FOR SALE

RATES

60c per line—minimum charge $2.40. Repeat insertions with no change in copy—three insertions for the price of two.
Display advertising in this section at published display advertising rates.
Estimate 41 characters per line, counting all spaces and punctuation as one character each. Allow ten characters for box number for blind advertisements. If address given, counts same as advertising copy.
Rates are net (no commission, no discount) and payable in advance of publication. Send your remittance with insertion order and copy.

Address all box numbers c/o* EXCAVATING *at South Milwaukee, Wisconsin

⅛-YARD

BAY CITY—⅜-YARD DRAGSHOVEL AND CLAMSHELL. Located near Boston. Box 1084-SS.

BUCYRUS-ERIE—10-B GASOLINE SHOVEL. Used about 6 months. Rechecked by factory inspector. First class condition. Located San Francisco. Box 1109-SS.

BUCYRUS-ERIE—10-B GASOLINE SHOVEL. Factory reconditioned. New machine guarantee. Available approximately August 1. Located Pa. Box 1110-SS.

INSLEY — TYPE C — GASOLINE SHOVEL. Engine recently rebored and reconditioned. Machine generally in good operating and mechanical condition. Equipped with Buda type KTU Diesel engine. Located Arkansas. Box 814-SS.

½-YARD

BUCYRUS-ERIE 16-B GAS SHOVEL. 16'-6" boom—12'-6" dipper handle—½ cu. yd. cast front inserted tooth dipper. Waukesha 6 cylinder 3¾"x4¾" gasoline engine. Excellent condition. Will demonstrate. Located western New York State. Box 930-SS

BUCYRUS-ERIE 1020 gas shovel and dragshovel. 18' shovel boom. 13' shovel dipper handle, ½ yard shovel dipper. Dragshovel equipment ½ yard front opening type of dipper. Electric starter. Waukesha DR 4 cylinder gas engine. Reported in good operating condition. Located Rhode Island. Box 956-SS.

BUCYRUS-ERIE 1020 Gasoline Positive Crowd Shovel. 18-ft. boom, 13-ft. dipper handle, ½-yard dipper. Waukesha D.R. 4-cylinder engine. Fair condition. Will demonstrate. Located Western New York state. Box 1073-SS

P & H MODEL 204 GAS combination ½ yd. shovel and 42' boom crane. Waukesha 4 cylinder 5"x6¼" engine. Good condition considering age. Located San Francisco. Box 1005-SS.

⅝-YARD

BUCYRUS-ERIE Type A steam shovel. 16' boom. 12'-6" dipper handle. ⅝ yard shallow cut dipper. Two speed propelling mechanism. Hand operated boom hoist. Located vicinity New York. Box 958-SS.

BYERS MODEL 62-CC GASOLINE SHOVEL. Has seen very little service. Located Virginia. Will sell on terms. Box 1105-SS.

P & H—MODEL 300-A—⅝ yard gasoline shovel. Located Kentucky. Box 1107-SS.

¾-YARD

AMERICAN STEAM SHOVEL. Oil burning. Caterpillar mounted. Main machinery and boiler very good. Balance of machinery needs some repairs. Located Arkansas. Box 965-SS.

BUCYRUS-ERIE TYPE B high lift steam shovel. 19'6" shovel boom. 16' dipper handle. ⅝ yard dipper. Located Virginia. Box 961-SS.